User's Role in Shaping WeChat as an Infrastructure: Practice, Appropriation, Creation

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WeChat is a necessity. It can’t be deleted.

Anonymous study participant

For my parents, Jianhua Zhou and Dan He, who have provided unconditional love to me throughout my life.

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LIST OF SYMBOLS AND ABBREVIATIONS

ANT	Actor-Network Theory
C2C	consumer-to-consumer
CMC	Computer-Mediated Communication
GFW	The Great Firewall
HCI	Human-Computer Interaction
ICT	information and communication technology
IRB	Institutional Review Board
MIM	mobile instant messenger
PRC	People's Republic of China
QR code	Quick Response code
SCOT	Social construction of technology
SEZ	Special Economic Zone
SMS	short message service
SNS	social networking site
STS	Science and Technology Studies
UK	United Kingdom
US	United States
WTO	World Trade Organization

SUMMARY

The past decade has seen the rapid development of information and communication technologies (ICTs), particularly online social platforms such as Twitter and Facebook. While online social platforms have existed since the early years of the internet, it is only in recent years that they begin to set foot on mobile devices, bringing them accessible to more people from all over the globe. Gradually gaining their presence in people's everyday lives, some of these social platforms (*e.g.,* Facebook) have started expanding themselves from a simple social platform to a more powerful, more embedded, and more transparent infrastructure, supporting their users through various ways that are not limited to social or communication aspects.

One instance of such a social platform that has successfully turned into an infrastructure is WeChat, the most popular mobile social application in China. Introduced in 2011, WeChat is currently the fifth largest social networking platform in the world, holding 1.16 billion monthly active users, who are mostly Chinese people living in China. When it was first developed, WeChat was solely a mobile instant messenger that supported users with a set of common communication media, including text messaging, audio messaging, etc. However, throughout its growth in the past nine years, it has also designed and integrated many non-communication, non-social functions for online payment, gaming, and much more. Nowadays, Chinese people use WeChat all the time: from paying street vendors to calling ride-hailing services, from reading daily news to reserving restaurant tables, WeChat is not only a communication tool but also an all-encompassing platform and infrastructure that Chinese people use to fulfill all kinds of needs. Given this prominent presence of WeChat and its status as both a platform and an infrastructure, WeChat's development and its relationship with its users are worth studying; its success offers a lot to learn about other similar platforms that are swiftly evolving into infrastructures.

This dissertation delves deep into understanding WeChat by focusing on how people use

it — taking a user-centered perspective. It asks questions about how people use WeChat, why people use WeChat, and how people's use of WeChat has influenced WeChat to move from a platform to an infrastructure. To answer these questions, five empirical studies were conducted, revolving around Chinese people's use of different functions on WeChat under various situations and scenarios. Relying on qualitative methods, these studies together provide a holistic view of how people use WeChat. In addition, a meta-analysis was done on data collected from these studies, aiming for teasing out the user's role in WeChat's evolvement from a platform to an infrastructure. Findings from these studies reveal that while WeChat influences users and shapes their interactions with each other, it is also affected and changed by users' practices as well. Furthermore, by using WeChat, users, knowingly or not, have pushed WeChat to become a powerful infrastructure. This dissertation is the first in-depth study that researches diverse aspects of WeChat by attending to people's ways of using it, providing a holistic view of Chinese people's engagements with WeChat in their everyday lives and how these engagements contribute to WeChat's becoming an infrastructure.

This dissertation offers three major contributions to the field of Human-Computer Interaction (HCI): first, it provides an in-depth exploration of a popular non-Western social and communication application (*i.e.,* WeChat); second, by taking a user-centered perspective, this dissertation uncovers the mutual-shaping relationship between WeChat and its users; third, most importantly, this dissertation contributes to understanding other social platforms' infrastructuralization processes by using WeChat as an exemplar, uncovering the role played by users in this process.

CHAPTER 1
INTRODUCTION

I was introduced to WeChat in early 2012 by my cousin. Not being a passionate follower of new technology, I decided to try out WeChat anyway since my cousin described it as "different from all the other instant messengers because you can send short audio messages just like text messages." "It's really convenient because you don't have to type, and the person on the other end can listen to your messages whenever they are free," he added. "Sure," I said, staring at the green logo of WeChat on my phone, wondering if I would ever encounter an occasion that would push me to use this audio messaging feature. At that time, with few people using it or ever heard of it, I thought WeChat was just another instant messenger that people might use for a while out of curiosity and then delete and forget about. To be honest, I had no expectation for WeChat.

But to my surprise, as some of my friends began to use WeChat around the same time, I found it was actually quite fun to chat with them on WeChat since we could explore its entertaining functions together. For example, there were stickers: small-sized images representing people's expressions and emotions. With various styles of stickers provided on WeChat, my friends and I enjoyed sending stickers when we chatted, creating more fun than solely using text. There was also a feature called "Shake," with which people could add each other's WeChat account if they were viciously shaking their phones at the same time. Playful features like these were not seen on other mobile instant messengers but only on WeChat, attracting me to spend more time on WeChat. Later, WeChat kept integrating many creative features as it developed. One of the most enjoyable features was Red Packet, which WeChat digitized the century-old Chinese tradition of sending red paper packets with cash inside to express good wishes. I had a lot of fun exchanging Red Packets with friends and family on WeChat after the feature was released. Truly, WeChat presented all kinds of

surprise by constantly introducing new features that were not seen elsewhere. To me, it felt like WeChat was always young, always fresh, never boring, and never old.

Later, I realized I was not the only one who felt this way — around me, everybody who used WeChat held similar feelings, that WeChat was fun, WeChat offered a lot to explore, and WeChat sucked most of our time when we were on our phones. It seemed like we were stuck on WeChat, unable to withdraw from it. Even my 80-year-old grandmother spent a large portion of her time on WeChat, watching and smiling at the videos of her great-grandchildren, who were not by her side. I was fascinated by WeChat's ability to attract different people and wondered what made WeChat this way, and what made it intriguing to diverse populations with distinct backgrounds from all over China. While there were other popular instant messengers such as QQ, none had reached the popularity WeChat had gained. Likewise, although other countries also have social applications such as Facebook and Twitter, these applications remained largely social networks that one could not do much other than connecting with people and socializing. (For example, one could not send Red Packets on Facebook.) Being a mobile application, WeChat was distinct from other instant messengers and social networks in that it constantly attracted people to it, kept them on it, and at the same time integrating both new social and non-social functions to attract even more people, time, and attention. As diverse and as powerful, WeChat was a peculiar phenomenon that had not seen at anywhere else in the world. Interested in why WeChat grows so influential that people cannot leave it, I want to closely study WeChat by attending to how WeChat is used by people and how this use of means for both WeChat and its users.

1.1 Dissertation Statements

While WeChat started as a mobile instant messenger in 2011, during the past nine years, it gradually evolves to become a necessity that is embedded in all aspects of Chinese people's life. Holding 1.16 billion monthly active users (Statista, 2020), it is one of the most popular and most established social platforms in the world. Simply due to this gigantic scale and

powerful presence, WeChat deserves a careful, thorough examination.

The popularity of WeChat builds on every individual user's practice of WeChat. Therefore, why people choose to use WeChat and how exactly they use it are key aspects to explore in order to understand WeChat's success and its embeddedness in people's lives. Although there are many factors that influence WeChat's development (Y. Chen et al., 2018), I argue people's use of WeChat is one of the central factors that shape and change WeChat. By adjusting its design and development based on user's needs and practices, WeChat attracts more and more people to use it and makes it difficult for people to leave it.

It is difficult for people to leave and stop using WeChat because WeChat is a necessity for getting around in urban China — it is no longer a simple mobile instant messenger but an all-encompassing platform which some argue has become as an infrastructure (Plantin & de Seta, 2019). Witnessing WeChat integrating social functions and all kinds of other non-social functions such as money payment features, which render WeChat almost omnipotent for fulfilling people's needs, I agree that WeChat has indeed become an infrastructure in China. Further, I argue that WeChat's move from a platform to an infrastructure is in close relation to the ways Chinese people using it, meaning that people's use of WeChat directly influence WeChat to evolve into an infrastructure. WeChat affects people through the functions and features it provides, while people also makes WeChat mightier through their use of WeChat. Essentially, this is how WeChat and its users relate to and influence each other.

This dissertation presents my five-year project that examines how WeChat moves from a platform to an infrastructure, through focusing on how Chinese people use WeChat to achieve their goals and the role played by WeChat in people's lives. I find that Chinese people use WeChat for all kinds of purposes and in a wide variety of occasions; and WeChat is the *default* communication and social tool for most of the Chinese. There is no doubt that WeChat plays a prominent role in supporting Chinese people's lives, as both a platform and an infrastructure.

1.2 Research Questions and Scope

In this dissertation, I will explain how I arrive at the conclusion that "WeChat plays a prominent role in Chinese people's lives as both a platform and an infrastructure." through answering the following research questions:

- How do Chinese people use WeChat in their everyday lives?
- Why do Chinese people use WeChat the ways they use it? What are their motivations and reasons behind?
- How does people's use of WeChat influence WeChat, as a platform moving towards an infrastructure?

To approach these research questions, I broke them further down into five smaller studies and looked at different aspects of WeChat in these studies. For the first four studies, I focused on studying Chinese people's use of WeChat within China; for the last study, I turned to Chinese people who are living overseas, looking at Chinese immigrants' and nationals' use of WeChat in the United States (US). While these fives studies have their own specific research questions and touch upon different parts of WeChat (*e.g.,* communication media, social network, and commercial features), they together provide a holistic view of WeChat and how it is used. However, since WeChat is constantly developing, these studies do not cover *all* aspects of WeChat and nor do they aim to, which is part of the limitation of my project. They aim for answering the research questions above, and the answers will be offered in later chapters of this dissertation.

1.3 Methodology

In this dissertation, all five studies were conducted with qualitative methodology. This is appropriate as the major research questions are *how* Chinese people use WeChat and *why* they use WeChat the ways they use it. Qualitative methods are suitable for digging deep

into understanding the details of and motivations behind a phenomenon. The phenomenon that is in concern here is people's interactions with WeChat.

Two qualitative methods I mainly used are interview and observation. Both being ethnographically-informed, I used them to trace and record the ways different people using WeChat. With interview, I was also able to explore what WeChat means for people in their lives, obtaining a holistic view of WeChat's relationship with its users. Other qualitative methods I used include medium probe (DiSalvo et al., 2016), diary studies, etc. In my studies, these methods act as prompts for participants to open up, which I then relied on follow-up interviews to discuss details with participants. Data collected from methods like medium probe and diary studies can also triangulate with data collected from interview and observation, guaranteeing the reliability of findings.

Since the methods used in each study varies slightly, they will be detailed in the chapters corresponds to the study (from Chapter 4 to Chapter 8). In addition, all these studies were approved by Georgia Tech's Institutional Review Board before conducting.

1.4 Contributions

Focusing on how Chinese people interact with WeChat in their daily lives, this dissertation contributes to the field of HCI from three aspects:

1. This dissertation is an in-depth investigation of a popular non-Western communication and social application (*i.e.,* WeChat). Since WeChat is developed in China and mostly used by Chinese people, WeChat carries many characteristics of China and the Chinese culture. While HCI has paid much attention to social platforms developed under Western contexts such as Facebook (Evans et al., 2018; Jack et al., 2017), and while WeChat has been studied by HCI researchers as well (Gui et al., 2017; Qiu et al., 2016), there lacks a holistic overview of WeChat as an influential social platform in a non-Western cultural context. This dissertation fills this gap.

2. Methodologically speaking, by studying WeChat from a *user-centered* perspective, this dissertation uncovers how the user and WeChat shape and change each other through their interactions. Thus, this dissertation rejects the idea that WeChat, as a technology, could develop solely on its own (which is the tenet of technology determinism (Kline, 2001)).

3. Finally, this dissertation contributes to understanding the ongoing, global phenomenon of platform infrastructuralization by taking WeChat as an exemplar. By analyzing data collected from the five empirical studies I conducted, I identify the role played by the user in WeChat's platform infrastructuralization process: users, by interacting with a platform, can potentially contribute to the platform becoming an infrastructure.

1.5 Overview of Dissertation

This dissertation has 10 chapters. Followed by this first chapter of introduction, the second chapter offers background information that is necessary for contextualizing and understanding my dissertation. This background information includes major societal changes happened in China from the year of 1978 to now, a brief history of the internet in China, and also an introduction of WeChat. After that, in Chapter 3, I reviewed relevant literature regarding my focus on WeChat's platform infrastructuralization from five aspects: social construction of technology, understandings of platform, understandings of infrastructure, platform infrastructuralization, and WeChat in HCI.

From Chapter 4 to Chapter 8, I detailed five empirical studies I conducted for my overall project of understanding how people use WeChat. Although each of the studies focuses on different aspects of WeChat use, they all contribute to the understanding of people use of WeChat as both a platform and an infrastructure. In Chapter 4, I discuss my first study on WeChat about how Chinese parents and their adolescent children, who were studying abroad in colleges, used various media on WeChat to communicate and craft their self-images. Uses of WeChat I found in this study conform to WeChat's design intention. Chapter 5 is also

about user communication, but focuses on communication via emoji and stickers, which are pictorial representations of expression and emotion. Relying on functions on WeChat that support emoji and stickers, users not only sent them as they were intended to be sent but also appropriated stickers for their own purposes. The next chapter, Chapter 6, switches focus to look at how young Chinese people take advantage of WeChat's instant messenger and social network (with the help of money transaction functions) to buy and sell on WeChat: hence young people's social commerce on WeChat. Chapter 7 continues to look at social commerce on WeChat, but presents a more comprehensive study on social commerce on WeChat by focusing on adults' experiences, thus delving deeper into the relationship between WeChat and social commerce, and the role played by WeChat in social commerce. My last empirical study on WeChat, as presented in Chapter 8, is about WeChat's use in the US, an environment outside China. As a medium, WeChat carries multiple messages, and users in the US weigh these messages to decide when to leave and when to stay on WeChat.

Using data collected from these studies, I conducted a new analysis, focusing on how user's interaction of WeChat could influence WeChat to move from a platform to an infrastructure in China. I found that the user interacts with WeChat on three levels: to practice, to appropriate, and to create. The second and the third levels directly contribute to WeChat's infrastructuralization. Chapter 9 details this analysis and its finding: the three-level user interaction process of platform infrastructuralization, which is the theoretical contribution of my dissertation. In the last chapter, I conclude this dissertation and discuss future work opportunities.

CHAPTER 2
BACKGROUND

Both WeChat and the Chinese people who use WeChat were born, raised under, and are currently still heavily influenced by the larger context of China. It is thus crucial to first learn about this larger context of China to reach a better understanding of the work presented in this dissertation. In this chapter, I offer an overview of this larger context by discussing how China has changed during the past four decades and how the internet in China has developed in this period. Before the end of this chapter, I also present an introduction of WeChat.

2.1 Changes in Contemporary China: From 1978 to Now

There are various ways to define "Contemporary China." In this dissertation, for the purpose of offering the context of WeChat, I will focus on China from the year of 1978 to now and refer to this period as Contemporary China. I choose 1978 as a starting point because it was in that year that China's leadership started enacting a new foundational policy that has since altered China widely and deeply: the *Reform and Opening-Up* (改革开放) policy. The goal of this policy was to reform China from inside and open up China to the outside world, so that both Chinese people's lives and China's economy could be improved. The first prominent step taken by the policy — to reform from inside — was to privatize land and introduce a market.

Introducing a market was radical in China, because the production, distribution, and consumption of goods were all managed centrally by communes at that time. Individuals had no right to produce or save products for themselves but had to follow the rules of communes. New markets were first introduced in the countryside, where farmers, who owned no lands and had to hand in their food production to communes, could now own some pri-

vate lands (divided from previous communes) and sell most of their food production as cash crops (Hunt, 2003). Money earned from selling crops became the farmer's private income which was at their own disposal. Farmers could use money to purchase what they need, instead of waiting for the distribution of commune. Research found that these changes had increased China's agricultural production by 25 percent by 1985 (Hunt, 2003).

Market and privatization introduced in agriculture set a precedent for other parts of the economy. Not long, other industries, such as light industry, also began to privatize. Different from privatizing agricultural lands, which was mostly reforming from the inside, privatizing other industries was more about opening up to the outside. To push the development of manufacturing and light industries, the Chinese government attracted foreign investments by offering more commercial flexibility to Guangdong and Fujian provinces and designating four Special Economic Zones (SEZs) in these provinces: Shenzhen, Shantou, Zhuhai, and Xiamen. In these SEZs, special tax incentives were offered to foreign investors and more independence was given to the SEZs for conducting international trade activities. In addition, both sino-foreign joint ventures and completely foreign-owned enterprises were allowed in the SEZs, and production was mainly export-oriented. Research showed that the SEZs played a major role in "liberalizing the Chinese economy" and had a prominent positive impact on China's economic growth (Leong, 2013). Seeing this great improvement, in mid-1980s, the government opened more cities and provinces to foreign investments.

With its domestic market boosted and flourished, China joined the World Trade Organization (WTO) in 2001, gaining more opportunities to do trade with other countries and further develop its economy. The consequence is staggering: China's foreign currency reserve increased from less than $200 billion to over $2,000 billion between 2000 to 2010, allowing China to invest abroad further (Trading Economics, 2020). From 1980 to 2018, China's gross domestic product (GDP) rose from 191.1 billion to 13.61 trillion, and the rate of GDP growth remained around 10% per year from 2000 to 2010 (The World Bank,

2020). Since the outset of the Reform and Opening-Up policy till 2010, China's economy development has been one of the fastest in world history (Mitter, 2008).

The rapid economic development and changes happening within China have lent profound influence on all aspects of Chinese people's lives. First of all is the dramatic increase of income for almost all Chinese people. Data showed that from mid-1980s to mid-2000s, income of the urban Chinese increased by 14.1% and for rural Chinese 11% (Mitter, 2008). The result of this increase of income was the rise of a new middle class: according to statistics, in 2013, 531 million Chinese (39% of the population) were middle class, defined as having a household income of between 50,000 RMB ($7,250) and 430,000 RMB ($62,500) (ChinaPower, n.d.). This increase of disposable money in turn created a consumer market that did not exist before, whose development was directly reflected by the goods and products people bought. Before the Reform, goods commonly craved by the Chinese to represent material success included a sewing machine, a bike, a wristwatch, and a radio receiver ("改革开放 40 年：中国家庭"四大件"的旧貌新颜", 2018). But as the urban middle class started to appear and grow after the Reform, the old, agriculture-oriented China was often seen as the past — the future was re-imagined as someone living in an urban apartment with running water and flush lavatory, gaining an undergraduate or even higher educational degree, having access to crucial entertainment services (*e.g.*, cable television), and the most importantly, owning consumer products such as white goods, electronic equipment (*e.g.*, phone), and even a car. Being able to purchase and enjoy new material luxuries opened a whole new world to ordinary Chinese people, providing them further engagements with foreign cultures and ideologies.

In fact, not long after the Reform started, the Chinese have begun to see, hear, and experience various foreign cultures and ideas. Japanese and European movies and TV dramas were imported; popular music from Taiwan and Hong Kong were circulated and sung among young Chinese; and since there was no more restrictions on what people could wear, diverse fashion trends were also explored among the Chinese (see Figure 2.1 as an exam-

Figure 2.1: An Example of Fashion Trends in China in the 1980s.

ple) (Mitter, 2008). For the first time since the founding of the People's Republic of China in 1949, large groups of foreign tourists and students were allowed to visit and study in China. In the meantime, Chinese people were also permitted to study and travel abroad (Mitter, 2008). Viewing foreign cultures on television and directly experiencing them by traveling abroad had both accelerated the spread of new ideologies, for example, individualism. A growing emphasis on personal and individual fulfillment could be frequently seen on popular advertisements, with slogans such as "love yourself more" or "different from the masses" (Mitter, 2008). All in all, the profound changes happened in China since the Reform have given the Chinese a freedom to explore and enrich their lives that was previously unimaginable. The introduction and development of the internet offer opportunities for the Chinese to further expand their horizon, although not in all aspects.

2.2 Internet in China

As the economy developed, technology in China also evolved — both technologies for larger-scale industries and technologies for individual, personal use. Technologies fell into the latter category were initially represented by telephones and TV, and later mobile phones. The internet permanently settled itself in China in 1994 (FlorCruz & Seu, 2014); since then, many domestic internet companies have been founded. To name a few well-known examples: Tencent, which is arguably the most famous internet company in China, was

established in 1998 and was also the creator of QQ — the most popular instant messaging software in China prior to WeChat (Tencent, 2018); Baidu, which was found in 2000, built the largest search engine in China (Baidu, 2018); Sina, founded in 1998, owns one of the largest Chinese news websites and creates Weibo, the Chinese equivalent of Twitter (Sina, 2018). Although these companies had started providing various internet services, from the 1990s till early 2000s, access of the internet in China was largely confined to computers (instead of mobile phones, which were mainly feature phones at that time), which were only available at some workplaces, in high-income households, and at uncommon internet cafes (FlorCruz & Seu, 2014). In addition, internet connection was mostly established via dial-up, which was slow and expensive. Hence, for quite a while after being introduced to China, the internet remained a luxury to most of the Chinese. Unique to the situation in China was that while some technologies soon became pervasive (*e.g.,* TV), home computers have never been widely adopted as they have in the United States (Statista, 2018a, 2018d; Q. Wang & Li, 2012), and this also contributed to the relatively slow growing rate of internet access in China (Statista, 2018b).

Instead of accessing the internet via personal computers, most Chinese's first online experience was completed on mobile phones (McCarthy, 2018; Statista, 2018c). A mobile era began around 2010, as affordable domestic smartphones became widely available in China. Xiaomi, a company that focused on making quality but low-cost smartphones, was established in 2010 (Mi, 2018). Huawei, the famous multinational telecommunications equipment company, also released its first Android phone in 2009 (Huawei, 2018), and it now occupies the largest mobile phone market share in China (Counterpoint, 2018). With affordable smartphones and a reliable networking infrastructure, Chinese people could surf the internet from almost every where at any time (Goldhill, 2013). Since then, functions that used to be solely available on computers started appearing on smartphones as well — the difference was that more people were using smartphones now (McCarthy, 2018). For instance, *Taobao* (淘宝), the most popular online shopping platform in China, became pop-

ular first through its website, which was accessed via computers; but later with its mobile application, it also attracted attention from rural Chinese and has built its popularity among them (C. Chen, 2018; Freedman, 2017). Further, there were new applications developed that could not be easily accessed on computers, such as Toutiao, a mobile application providing trending news. WeChat was released at this time. It debuted as a mobile application in early 2011, though it later provided a computer-accessible alternative version as well (WeChat, 2011).

One significant move regarding the internet in China was the implementation of "the Great Firewall (GFW)," a surveillance and regulation project initiated in 2000 (Economy, 2018). It prevented internet users in China (except Hong Kong and Macau) from accessing certain foreign websites. These websites were identified by the Chinese government as potentially threatening to the overall good of China, most likely seen from the Chinese government's standpoint (J.-A. Lee & Liu, 2012; L. L. Zhang, 2006). They included common social networking sites such as Facebook and Twitter, and some other popular news outlets such as New York Times. Google, who refused to conform to the censorship requirements of the Chinese government, retreated from China in 2010, corresponded to the time when Chinese people entered a mobile era. Although few websites remained accessible under GFW (*e.g.,* Airbnb and LinkedIn, which has a localized version in China), most large, successful foreign internet services were banned. This firewall thereby also contributed substantially to the flourish of domestic internet services within China.

Today, a smartphone with a fast internet connectivity has become a must-have for living in China. While this is in part due to convenience, such as for an ease of shopping online or chatting with friends, in other ways, a smartphone is truly a necessity — for getting around in cities where mobile applications are means for paying subway tickets, taxis, and restaurant checks. Without a smartphone, it is hard to imagine how somebody would get around in China. In China, this unshakable role of smartphone was achieved through WeChat.

Figure 2.2: WeChat Landing Page.

Figure 2.3: Send an Audio Message in WeChat.

2.3 Introduction of WeChat

WeChat is the most popular mobile social platform in China and the fifth in the world (Statista, 2020). Up till April 2020, it has accumulated 1.16 billion monthly active users (Statista, 2020). It is often described as an "all-encompassing mobile application" since it can support all kinds of Chinese people's needs in their daily lives (Chao, 2017). With WeChat, users can communicate via text, emoji, image, audio, and video; they can also pay their utility bills or book restaurant reservations; further, they can even call a taxi on WeChat or check out books via local library's WeChat official account. On WeChat, people can do things they can or cannot imagine. If one asks a Chinese what mobile application they use the most often, very likely, their answer will be WeChat (Chao, 2017; Lawrence, 2016).

How did WeChat evolve into an omnipotent application? In 2010, the leader of QQ mail in Tencent, Xiaolong Zhang, began to develop WeChat with his team, aiming at devel-

oping a native mobile communication tool for the Chinese (Brennan, 2015). When WeChat was publicly released in early 2011, it was named *Weixin* (微信), which literally translates to "micro mail." The newborn WeChat was a simple and even rudimentary mobile instant messenger (MIM), with few differences from other instant messengers such as Line or WhatsApp. As an MIM, it ran on smartphones and supported both synchronous and asynchronous communication through audio/video call and text/audio messaging. It had some social features, such as *Yaoyiyao* (aka Shake) and *Piaoliuping* (aka Drift Bottle), which allowed users to search for and add strangers as contacts (Y. Wang et al., 2015). But these initial social features were tertiary when comparing with WeChat's instant messenger, where user's conversations were listed from the latest to the oldest on the landing page of WeChat (Figure 2.2). One feature that distinguished WeChat from other messengers from early on was its audio messaging feature (Figure 2.3). Users could tap the speaker button to the left of the text input box at the bottom of a conversation, and then press the "Hold to Talk" button to record an audio message less than a minute. An audio message was sent just as other text messages, except that it could only be listened to.

Before WeChat, Tencent had already dominated a large portion of the online communication market in China — thanks to QQ (Jucha, 2012; Millward, 2018). Similar to WeChat, QQ was an instant messaging and social networking application. Launched in 1999, it was the most widely used online communication tool in China until in late 2010s, when it was surpassed by WeChat (Law, 2017). Different from WeChat, QQ was developed as computer software first and then as a mobile application. It was famous for its membership system, where users could gain a higher membership status through staying active on QQ for a longer time and engaging in other QQ-supported activities. Even now, many Chinese can still vividly recall the time when they had fun on QQ (Law, 2017). Yet why did Tencent invest in WeChat when QQ was already quite successful? Because as the Chinese started enjoying the internet on mobile devices, the leadership in Tencent observed that Chinese people needed another simpler, more focused messaging application that was specifically

designed for mobile devices (Law, 2017). While QQ had a mobile application, it was not well re-designed to fit into a mobile environment but more an adaptation from QQ's computer software, which resulted in mobile QQ being clumsy and less intuitive to use. Thus, Xiaolong Zhang's idea for creating a new mobile messenger from scratch (*i.e.,* WeChat) was soon recognized within Tencent. Tencent's decision was to maintain both QQ and WeChat, with QQ attracting a younger user group that was expected to naturally migrate onto WeChat once they grow older, moving outside of college and beginning to work in professional settings (Y. Chen et al., 2018). In fact, for quite a while, Tencent had been planning on developing an application for everything that acts as an "internet infrastructure" (Y. Chen et al., 2018). QQ was its first attempt, but it did not and still has not realized this goal. For Tencent, WeChat had more potential to succeed.

Tencent pushed WeChat to become an all-encompassing application with a series of moves, integrating numerous diverse functions (WeChat, 2019). In late 2011, WeChat added a video clip function that allowed users to send short video clips. A year later, WeChat enabled real-time audio and video chats and also introduced Quick Response (QR) codes and sticker sets. In 2012, WeChat created its own version of online social network, Moments, adding a social layer on top of the existing instant messenger. On Moments, whose Chinese name meant "friend's circle" (*Pengyouquan* 朋友圈), users could post text, images, short videos, and comment on each other's posts. However, different from other popular social media (*e.g.,* Facebook and Instagram) which allowed users to search for and follow strangers, Moments was created around people who the user has already known in the real world, because in the beginning, most users' WeChat contacts were their existing friends on QQ or phone contacts, and one had to become the user's WeChat contact first to view the user's Moments. In this sense, Moments was not as open as other online social networks, but it did provide a means for users to move their offline connections online.

The next significant integration was adding official accounts (*Gongzhong Hao* 公众号), which also happened in 2012. Official accounts were subscription accounts managed

by organizations, corporations, or individual content creators. Owners of official accounts could edit and publish information as articles and then send these articles as messages to all the users who follow them. Such a broadcasting feature was often used to distribute news and other various contents. Besides receiving messages, users could also send messages to official accounts just like chatting with other individual WeChat contacts, although these messages could be seen only by the owner of the official account. With official accounts, WeChat enabled information from outside of WeChat to flow and circulates on WeChat.

While circulating information was important, circulating money was also a crucial goal. In 2013, besides group chats and games, WeChat introduced the significant WeChat Wallet, which was a virtual wallet that allowed users to enjoy various financial and commercial services. On WeChat Wallet, users could connect their bank cards to WeChat Pay and then complete transactions via QR codes that were either for paying or receiving money, and these transactions could be internal or external to WeChat (*i.e.,* in the real world). The introduction of WeChat Wallet certainly pushed WeChat further towards commercialization (Millward, 2018). Soon after, WeChat digitized the age-old Chinese tradition of Red Packet (*Hong Bao* 红包, gifting cash during festivals and other significant occasions) and started supporting money transference among users, allowing users to send and receive money inside their one-on-one or group conversations. Official account owners could also receive money in their articles through their followers' tipping. It was also around that time that the online shopping mall within WeChat — WeChat Store (*Weixin Shangcheng* 微信商城) — was released. By the end of 2016, WeChat had successfully integrated users, information, and money all on one single platform.

The most recent attempt to make WeChat even more powerful was through creating mini programs (*Xiao Chengxu* 小程序) (Millward, 2018). WeChat previously allowed official accounts to offer some external services to WeChat users, but these services were limited due to the interface design regulations of official account. Mini programs were freer than official accounts in that, on one hand, mini programs permitted developers who were

external to WeChat to write their own programs and then attach them onto WeChat (as mini programs), ready to be used by billions of WeChat users. On the other hand, users could also enjoy diverse external functions provided by mini programs but still remain on WeChat, since mini programs had to be accessed from within WeChat. This design decision made WeChat "stickier" (Y. Chen et al., 2018), as users did not need to leave WeChat for other applications. With all the moves described above, WeChat succeeded in attracting more users and persuading them to stay; it also built its own ecology as an influential, gigantic platform.

As a summary, I categorize the major features on WeChat into six functional sections: (1) communication, including features for messaging, such as texting and video conferencing; (2) social networking, including Moments; (3) content subscription, including official accounts; (4) finance and commerce, including WeChat Wallet and features for money transaction such as Red Packet and WeChat Store; (5) entertainment, including games; (6) external services, including third-party services offered within WeChat Wallet and mini programs. These sections are mostly distinct, but sometimes they overlap. For instance, emoji and stickers are both a communication medium and also an entertainment feature. In addition, these sections are not isolated from each other — many non-communication functions, such as money transfer and mini programs, can be accessed in one-on-one or group chats. Although these functional sections have distinct foci, it is more appropriate to view them as fingers of one hand that collaborate to support the hand functioning well — WeChat as a holistic mobile application is this metaphorical hand.

CHAPTER 3
LITERATURE REVIEW

At the heart of this dissertation is an understanding that WeChat, like all the other information and communication technologies, is largely influenced and shaped by human interactions. In great part due to users' interactions with WeChat, WeChat has gradually moved from a mobile platform to an infrastructure that embeds into people's everyday life in China. To contextualize WeChat's platform infrastructuralization, in this chapter, I first review key literature in social construction of technology, then introduce different understandings of platform and infrastructure. After that, I lay out the emerging phenomenon of platform infrastructuralization (or the infrastructuralization of platforms). In the end, I focus on past work in Human-Computer Interaction (HCI) that studies the properties of WeChat as a platform.

3.1 Social Construction of Technology

Social construction of technology, or SCOT, is a theory that explores the relationship between technology and society: technology does not exist independently in the world; since its creation and throughout its development, a technology will be influenced, shaped, and changed by the larger social environment it is in and people who use or relate to it (these people are often described as "stakeholders" or "relevant social groups.") SCOT originates from Science and Technology Studies (STS), sociology of scientific knowledge, and the history of technology (Bijker, 2001). It is a fierce response to technological determinism (Kline, 2001), which argues that technology is immune to human or other social forces' influence and has the ability to change people and the society without being affected. SCOT matters in this dissertation because the phenomenon of WeChat moving from a platform to an infrastructure is undeniably, although not completely, influenced by people's use

of WeChat and the larger social context around WeChat, meaning this change of WeChat reflects SCOT. Therefore, SCOT as a theory is a useful and valuable angle to approach WeChat's infrastructuralization. I thus leverage SCOT as the overall theoretical underpinning of this dissertation.

Social construction of technology and its acronym SCOT were first coined in Vol. 14 of the journal Social Studies of Science, published in 1984 (Pinch & Bijker, 1984). In their paper, *The Social Construction of Facts and Artefacts: or How the Sociology of Science and the Sociology of Technology might Benefit Each Other*, STS scholars Trevor Pinch and Wiebe Bijker outlined a program and argued the sociology of technology could learn from the sociology of science (which focused on the social construction of scientific knowledge), encouraging scholars to take a "social constructivist view" to understand and study technology (Pinch & Bijker, 1984). With this call, soon, scholars from different fields with similar concerns on the social influence and shaping of technology set out to embrace this new lens of looking at technology. This line of research and discussion continue till this day, and I provide a few seminal examples below.

One approach of studying the social construction of technology is to find an exemplary technology, trace its history of development, and find out how relevant social groups played a role in its evolution. An example of this approach is American historian of technology Thomas P. Hughes's analysis on public electricity supply (Hughes, 1999). From Hughes's perspective, Edison was the major, decisive social factor: it was Edison who owned a determining vision to publicize the use of electricity in people's homes and thus he did everything he could to accomplish this goal. Hughes's analysis of electricity supply revolved around one social determinant's (*i.e.,* Edison's) experience, which successfully uncovered the critical influence one important social actor could exert on the development of a technology. However, Hughes paid little attention to other social factors besides Edison. According to Hughes, the social factors that affected the construction of public electricity were only the ones related to Edison's individual experience.

Instead of focusing on how social factors affect technology (as a uni-directional force), other approaches of SCOT later looked at how technology and society influence each other. A classic example is Bijker's analysis of the development of safety bicycle (Bijker, 1997). Bijker identified several relevant social groups (*e.g.,* bicycle producers and riders) that influenced the development of the safety bicycle and analyzed the concerns of these social groups with bicycle, how the development of bicycle responded to these concerns, and how the social groups were in turn affected by the adjustments of bicycle as well. He followed the principle of symmetrical analysis, paying equal attention to both the dominant and the peripheral usages of several variations of bicycles in development. He concluded that after being influenced and shaped by various social groups, bicycle reached a stability, which is the common safety bicycle we see today. Bijker's analysis on safety bicycle embodies SCOT as both a theoretical stance and an analytical method. Different from Hughes's analysis and other earlier studies on the relationship between technology and society (*e.g.,* (Cowan, 1976)), Bijker's approach emphasizes the co-constructive nature between technology and society.

Another line of work that falls broadly under the umbrella of SCOT is French philosopher Bruno Latour's Actor-Network Theory (ANT). ANT explores further into the "social construction" of SCOT by asking an ontological question: What is social? According to ANT, what is social is constructed by social actors, which can be either human or non-human (*e.g.,* technology), and the numerous associations among these social actors (Latour, 2005). ANT was initially formed by Bruno Latour and Steve Woolgar when they studied the social construction of scientific knowledge (Latour & Woolgar, 1979). By observing how different actors, such as researchers and apparatuses, played a different role in a science lab and then shaped the progress of lab activities, Latour and Woolgar argued that scientific knowledge was produced in the associations of these actors, as they connected and interacted with one another to form a network. Comparing with previous approaches of SCOT, ANT's understanding of "social" is broader in that social actors (or relevant social groups)

do not only include humans but also non-humans, such as technology (however, it is important to note that ANT does not fall under the trap of technological determinism because it stresses the associations among social actors, denying that actors are independent).

As shown by these examples, SCOT as a theory keeps evolving and approaches under SCOT could vary with each other slightly depending on their specific focuses. But what remains unaltered is SCOT's core tenet that human and the society can influence and shape technology. This dissertation demonstrates this theory by revealing the role users play in WeChat's infrastructuralization process.

3.2 Platform

The term "platform" is commonly used in computing and media studies. In computing, platform was first seen in the 1990s, around which large tech companies, such as Microsoft, began to describe their products that supported other applications running on top of them as platforms (*e.g.,* computer operating systems). When computing scholars started examining platforms more, they formed a line of work called "platform studies" (*e.g.,* (Bogost & Montfort, 2009; Gillespie, 2010, 2015)), in which computing and media scholars Ian Bogost and Nick Montfort coined the foundational understanding of platform.

In their *Platform Studies: Frequently Questioned Answers*, Bogost and Montfort argued that a platform can be either software (*e.g.,* operating system) or hardware (*e.g.,* computer) as long as it is reprogrammable, essentially "a computational infrastructure" (Bogost & Montfort, 2009). Citing a famous software engineer, the co-creator of Mosaic and founder of Netscape, Marc Andreesen, they defined platform as below:

> [A] "platform" is a system that can be reprogrammed and therefore customized by outside developers — users — and in that way, adapted to countless needs and niches that the platform's original developers could not have possibly contemplated (Andreessen, 2007).

Despite Bogost and Montfort defining platform based on its reprogrammability, platform had soon been used by online service providers such as YouTube to present themselves as a neutral intermediary that offers a space for users to communicate and share information (Gillespie, 2010). Drawing from this increasingly popular use of platform, in media studies, scholar Tarleton Gillespie argued that a discursive understanding of platform is now more appropriate for platform (Gillespie, 2010). He examined common usages of platform and grouped them into four categories: computational, architectural, figurative, and political. Computationally, platform refers to computing infrastructure that users can reprogram. Architecturally, platform refers to "human-built or naturally formed physical structures" (Gillespie, 2010). Figuratively, platform means the foundation of a condition. Politically, "the issues a political candidate or party endorses as their 'platform"' (Gillespie, 2010). Gillespie found the discursive understanding of platform used by online service providers to endorse themselves covers meanings from all the four categories above — depending on the specific context and intention of use.

As platforms keep evolving, they have also attracted attention from fields outside of computing or media studies. In their book *Platform Revolution: How Networked Markets Are Transforming the Economy — And How to Make Them Work for You*, business and information systems scholars Geoffrey G Parker, Marshall Van Alstyne, and Sangeet Paul Choudary provided an up-to-date definition of platform by focusing on the objective of platforms (G. G. Parker et al., 2016):

> A *platform* is a business based on enabling value-creating interactions between external producers and consumers. The platform provides an open, participative infrastructure for these interactions and sets governance conditions for them. The platform's overarching purpose: to consummate matches among users and facilitate the exchange of goods, services, or social currency, thereby enabling value creation for all participants.

In this dissertation, I adapt Parker et al.'s definition of platform and define platform as

a digital technology with an open architecture that designed to facilitate user interactions, with some rule of governance set by the platform. Thus, technical services that support user activities with some guidance and rules are platforms — those that allow users to reprogram (*e.g.,* computers), or those that support users to generate contents (*e.g.,* online social networks), or those that simply facilitate users completing activities (*e.g.,* ride hailing services). WeChat as a social application is a platform.

3.3 Infrastructure

To understand the meanings of infrastructure, it is necessary to learn how infrastructure is developed. Information systems scholars Paul Edwards and colleagues summarized the *three phases of infrastructure development* (Edwards et al., 2007).

First, infrastructure begins from *systems*, which are "linked sets of devices that fill a functional need" (Edwards et al., 2007), such as a railway system that includes trains and rails. In the context of computing and information technology, a system can include both hardware and software. For instance, a computing system includes not only monitors and keyboards (hardware) but also operating systems (software). When system builders develop systems, they start with the idea that systems will be used locally by a group of people at one location to fulfill a specific set of objectives. They do not know if these systems will become large infrastructures later.

After a system fulfills its initial objectives for users at one location, the next phase in infrastructure development is to expand the system to multiple locations. Edwards et al. named this phase "technology transfer and growth" (Edwards et al., 2007), or more briefly, *scaling*. Here, a location is not constrained to geographical locations but can be more generally understood as scenarios or contexts where other users use the same system. When scaling, a system adapts to new locations, including new users, new challenges for implementing the system, etc. Oftentimes, a system has to be redesigned slightly to successfully fit into new locations.

The last phase is *consolidation*, in which multiple systems connect to form a *network*, or one system defeats all other competitors in the market and thus becomes a *monopoly* (Edwards et al., 2007). The former situation happens much more often than the latter in the history of computer infrastructure development thanks to the assistance of *gateways*. Gateways "allow previously incompatible systems to interoperate" so that heterogenous systems can connect to form a network (Edwards et al., 2007). Examples of gateways include power converters, HTML, and Application Programming Interfaces (APIs). An instance of a network formed by heterogenous systems and gateways in information technology is the internet. Networks are infrastructure, whose scope is close to universal in a certain region (usually in a country). When networks connect across different countries, they form "networks of networks" that Edwards et al. termed *internetworks* (Edwards et al., 2007). The internet becomes an internetwork when it expands globally.

To summarize, both networks and internetworks are infrastructure, while systems are not. What distinguishes an infrastructure from a system is that the scale of the former is close to ubiquitous, either within a country or across the globe. In addition, a system does not start with the intention of growing into ubiquity.

While this classic understanding of infrastructure in information systems focuses on its scale, another way to perceive infrastructure is through its relationship with human. Still in information systems, scholars Susan Leigh Star and Karen Ruhleder argued that a technology, as a tool in practice, only becomes an infrastructure in relation to how we use it; so the right question to ask is "*when* — not *what* — is an infrastructure" (Star & Ruhleder, 1996). They proposed to see infrastructure as *a relationship between local and global* (Star & Ruhleder, 1996):

> [A]n infrastructure occurs when local practices are afforded by a large-scale technology, which can then be used in a natural, ready-to-hand fashion. It becomes transparent as local variations are folded into organizational changes, and becomes an unambiguous home — for somebody. This is not a physi-

cal location nor a permanent one, but a working relation — since no home is universal.

Based on this understanding, Star and Ruhleder discussed nine qualities of infrastructure: embeddedness, transparency, wide reach or scope, learned as part of membership, links with conventions of practice, embodiment of standards, built on an installed base, becomes visible upon breakdown, and fixed in modular increments (Star & Ruhleder, 1996; Star & Strauss, 1999). These qualities are widely acknowledged and applied in HCI (*e.g.,* (Jack et al., 2017; Ribes & Finholt, 2007)).

3.4 Platform Infrastructuralization

3.4.1 Platform vs. Infrastructure: Commonalities and Differences

There are commonalities and differences between platform and infrastructure. For commonalities, both are for people's use, and both are foundations to facilitate people's activities. Platforms are designed to be used by people to fulfill goals. Likewise, infrastructure supports applications, systems, and activities happening on it.

However, there are fundamental differences between platform and infrastructure that can help us in critical examination of the socio-technical context of software such as WeChat. First is scope. Infrastructure is widespread and close to universal. For example, networks are infrastructure pervasive within a country; they are accessible to most of the citizens of this country regardless of these citizens' socio-economic status or geographical location. Similarly, internetworks, such as World Wide Web, is an infrastructure because it is close to universal around the globe. In contrast, platforms do not have as large scope and reach as infrastructure. For example, a video game console is a platform (Montfort & Bogost, 2009). It is scoped locally (for video games), designed for local use (play games), and is practiced by some people (gamers), not all.

The second distinction between platform and infrastructure is that platforms are usually

part of an infrastructure. Platforms are typically part of a system, or they are systems in themselves. For instance, a computer is a platform. It can be seen as part of an email communication system because it is the hardware component for email communication. A computer can also be viewed as a powerful information processing system in itself because it contains processor, memory, input devices like keyboard, output devices like monitor, drivers of these hardware, and many other applications that run inside this computer. When systems expand to different locations and are later connected via gateways, they then form infrastructure. Platforms, which are part of systems, are thus part of infrastructure too.

The third distinction between platform and infrastructure is related to their design and development process. Generally, a platform is designed and developed by employees within one corporation with target users in mind. Once the platform is released to the market, users provide feedback to developers and designers, who then iteratively provide solutions to improve the platform with updates, such as software update packages. For platforms with re-programmability, users can reprogram these platforms to meet their own needs. For platforms without re-programmability but relying on users to generate content, users will shape these platforms through the content they share. In summary, when building platforms, developers and designers know from the outset that these platforms will be constantly adjusted and modified later, by their original developers or through external users' interactions. Hence, when first released, the functions of platforms are not complete nor comprehensive.

For an infrastructure, it does not start with knowing or allowing users to elaborate or expand on it; instead, it takes users and their local environments into consideration during development. Although user feedback is important for infrastructure development, permitting user adjustment from the outside is not common. In recent years, however, scholars have argued for the integration of stakeholder participation (especially user's) into the design and development process of infrastructure building (thus *infrastructuring* (Pipek & Wulf, 2009)). But it is still not a convention for infrastructure or system builders to inte-

grate user elaboration.

In short, although platform and infrastructure share many similarities, they are different with distinct characteristics and user integration strategies. If one must relate platform to infrastructure, perhaps it is the most appropriate to understand platforms as a kind of "local," "pliable" aspect of infrastructure, since platforms do facilitate user activities but with a more focused context, welcoming user elaboration.

3.4.2 The Infrastructuralizaton of Platforms

With the proliferation of information technology during the past decade, the line between platform and infrastructure has blurred, as platforms, such as Facebook, start looking more like infrastructure. This phenomenon of *platform infrastructuralization* (Plantin et al., 2018) has drawn attention from scholars in various fields (*e.g.,* (Kenney & Zysman, 2016)). Among them is a recent, yet foundational, paper by Jean-Christophe Plantin and colleagues, titled *Infrastructure Studies Meet Platform Studies in the Age of Google and Facebook* (Plantin et al., 2018). By detailing the history of infrastructure studies and platform studies, and by examining the cases of the internet, Facebook, and Google, Plantin et al. argued that "platform-based services acquire characteristics of infrastructure" (Plantin et al., 2018).

To support this argument, Plantin and de Seta exemplified how platforms can become infrastructures with one case study platform — WeChat (Plantin & de Seta, 2019). They explained WeChat's infrastructuralization process by pointing out its integration of various functions and by taking the larger context of Chinese internet development into account. Relying mostly on secondary sources such as business reports, they identify the significant determinant in WeChat's infrastructuralization: the "techno-nationalist pursuit of cyber-sovereignty" of the Chinese government (Plantin & de Seta, 2019). This means that the expansion of WeChat is permitted by the Chinese government if WeChat does not challenge the sociopolitical stability defined by the government and allows for the government's control and surveillance of its functions and data.

According to Plantin et al.'s papers, the path for a platform to become an infrastructure is quite different from how systems form infrastructure. We mentioned earlier that Edwards et al. highlight two paths for systems to develop into infrastructure: first, there is a more traditional, common path of connecting heterogenous systems into networks with the help of gateways; the second, less common path is to win the entire market, defeating all other competitors (Edwards et al., 2007). The conclusion reached by Plantin et al. was that platforms like Facebook take the latter, less common path to infrastructuralize, with the help of their internally developed gateways (*e.g.,* Facebook APIs) (Plantin et al., 2018). These gateways not only connect to external systems but also build connections among diverse internal functions, pushing the platform to reach a near-monopoly. In some cases like WeChat, platforms also infrastructuralize with the support of the government (Plantin & de Seta, 2019).

Building on the work on platform and infrastructure (and particularly, Plantin et al.'s work), in this dissertation, I want to take a human-centered perspective to deepen the understanding of platform infrastructuralization. As an HCI researcher, what is more interesting to me, while being less visible in previous literature (Plantin & de Seta, 2019; Plantin et al., 2018), is the potential role of user in platform infrastructuralization. WeChat is a great case to study since it has been identified as both a platform and an infrastructure (Plantin & de Seta, 2019).

3.5 WeChat in HCI

Although WeChat has recently been identified as both a platform and an infrastructure, in HCI, it has mostly been seen and studied as solely an interactive mobile platform (or more accurately, an interactive application.) For instance, researchers investigated WeChat's usability (Y. Cheng & Budiu, 2016) and user experience (Y. Cheng & Nielsen, 2016), which were important aspects for interactive applications. Another common approach HCI researchers took when studying WeChat was to focus on how and why people use one or

several of its functions. The functionalities researchers studied included emoji and stickers (R. Zhou, Hentschel, et al., 2017), conversation groups (Qiu et al., 2016; T. Zhang et al., 2017), audio/video chats (R. Zhou, Wen, et al., 2017), official accounts (X. Liu, 2018), social network Moments (Dai & Wang, 2018; Y. Li et al., 2018), the health tracking feature *WeRun* (Gui et al., 2017), Red Packet (Wu & Ma, 2017), and WeChat Wallet (Wu & Ma, 2017).

Besides research that attended to WeChat's functionalities, there were other studies that explored WeChat's influence on people and society more generally, such as people's motivation of using WeChat (Y. Wang et al., 2015), how WeChat enhanced social practices (Y. Wang et al., 2016), and how WeChat influenced people's public involvement (X. Wang & Gu, 2016). In this dissertation, I also start by taking WeChat as a mobile platform and investigating how the Chinese use different functions on WeChat, however, with an overarching focus on how people's use of WeChat could influence WeChat to move from a platform to an infrastructure. With this focus, I treat WeChat as a holistic platform (and in the end, an infrastructure too), on which its various functions come together to assist WeChat performing as the user needs.

CHAPTER 4
LONG-DISTANCE COMMUNICATION BETWEEN PARENTS AND CHILDREN

I started studying WeChat from its core communication functions in 2015. At that time, WeChat had incorporated various communication functions besides text and audio messaging. A few examples of these functions included short video clips, Red Packets, and also a social network named Moments where users could easily communicate as well. Building upon previous studies on parents' and children's use of information technologies (*e.g.,* (Clark, 2014; DiSalvo et al., 2016; Yardi & Bruckman, 2011; Yarosh et al., 2009; Yarosh et al., 2016; Yarosh et al., 2013)), I wanted to understand the cultural influence of information technology in people's communication and chose to studying parent and child communication specifically. Knowing that many Chinese parents used WeChat to communicate with their children, who were adolescents and studying abroad, I wonder how this communication took place, how different communication media played a role, and what WeChat meant for these parents and children. During the study, it quickly became apparent to me that this study was, in fact, centered on WeChat. Because even though the children were in another country, WeChat was the "home" technology they and their families preferred. This study offered me a chance to overview various communication media on WeChat and how specific population groups (*i.e.,* parents and their children) used functions on WeChat as these functions are intended to be used.

4.1 Background

In the past decade, the number of Chinese students studying in the United States has more than quadrupled (Project Atlas, 2015), and their parents play a large role in their choice to pursue higher education abroad (Bodycott, 2009). While most of these students start studying abroad for undergraduate or graduate degrees, some start as early as middle or

high school. Therefore, they leave home around the age of 15 to 22 — a crucial time when adulthood and autonomy are formed. At the same time, because of China's *One-Child Policy* (独生子女政策) enacted from 1979 to 2015, these students are usually the only child in their nuclear families (BBC News, 2015). It has been suggested that this policy, coupled with Chinese culture, has resulted in parents holding extremely high expectations for their child (NPR Org, 2008). The child, on the other side, feels pressure to behave well and struggles to seek for his/her independence (Fong, 2004; J. Li, 2001). Those children who study abroad may have more freedom, but their parents still exert their authority in many ways and rely on the use of communication technologies.

Designing for communication can often be influenced by cultural factors, but I anticipated that the intimate relationships between parent and child and the cross-cultural experience of Chinese students would make the influence of culture on ICT use greater. Thus, motivated by exploring ICT in the culturally loaded context of intimate family relations and understanding the possible different uses of a variety of media, I conducted a qualitative study with Chinese students studying in a US college and parents of students studying abroad in China (R. Zhou, Wen, et al., 2017).

4.2 Data Collection and Analysis

This study included two parts. First, I gave nine Chinese college students who were in the US a week-long design activity named medium probe (DiSalvo et al., 2016), and then interviewed them about their communication with their parents in China based on their responses to the medium probes. Second, I traveled to China and interviewed 15 Chinese parents, whose only child was studying abroad as an undergraduate or graduate student.

4.2.1 Part One - Chinese Students in the United States

The first part of the study was conducted with nine college students (see Table 4.1) attending the same large public university in the United States. Students were recruited through

Table 4.1: Study 1 Student Participant Demographics.

Student No.	S1	S2	S3	S4	S5	S6	S7	S8	S9
Gender	F	M	F	F	F	F	F	M	F
Age	22	22	24	21	21	20	19	22	19

snowball sampling. All participants were between 18 to 24 years old, originally from China, and had come to the US in high school or college. We chose this age range to understand if adolescents who are in their young adulthood would use information technology in unique ways as they navigate the transition from child to adult (Curtis, 2015), particularly with parents at a great distance. Of these nine participants, seven were females and two were males. All the participants were the only child in their families, except S1 who had an elder sister.

Prior to the interview, we gave each participant a medium probe to help them explore and reflect on their use of communication media with their parents in China. The medium probe is a method developed by DiSalvo and Roshan (DiSalvo et al., 2016) to focus on studying the format of information in different technological media. We were inspired by their proposal of the medium probe and believed it could be helpful for us. The medium probe was a kit containing six activities to encourage communication with parents. These were to be completed on six different days within a week. The kit included a postcard, a stack of eight pieces of 4" $\times$ 6" paperboard, and a ribbon that tied everything together.

The eight pieces of paperboard (see Figure 4.1) consisted of one cover, one general instructional board, and six activity boards. All instructions on the paperboard were etched with a laser cutter. Each activity board had one activity, such as "write about your life in the US on the postcard attached and mail the postcard to your parents." The goal, similar to cultural probes (Gaver et al., 2004; Gaver et al., 1999), was to make the kit aesthetically pleasing and enjoyable for the participants to interact with. We did not seek direct research findings from the probe but used it as a way to encourage reflection on communication

Figure 4.1: The Medium Probe Kit.

media. Participants were instructed to complete the activity and then keep notes of their ideas and thoughts on the piece of paper attached to the back of that board.

Within one week of finishing all the activities, I collected the medium probes, read through all participants' notes carefully to understand their media use, and designed follow-up interviews based on these notes. I then interviewed participants one-on-one and asked them to reflect on their experiences of completing these probe activities. I asked them how they felt about these activities, which communication media they preferred, and how they communicated with their parents in general. The interviews took place at open spaces or coffee shops on campus and lasted around half an hour for each. While no formal compensation was provided, I offered each one of them a cup of coffee or tea as thanks for their time.

4.2.2 Part Two - Chinese Parents in China

The second part of the study was conducted in Shenzhen. The parents who participated were all urban and owned their own apartments and cars. With our understanding of the student participants' media use in communicating with their parents, we also knew the media parents would be using. Because of this, I chose to focus our study with parents on how they used media in detail and thus used interviews not medium probes. I interviewed

Table 4.2: Study 1 Parent Participant Demographics.

Parent No.	Gender	Age	Child's Gender	Child's Age	Child's Country
P1	F	51	M	24	US
P2	F	48	F	22	US
P3	M	50	M[a]	21	UK
P4	F	48			
P5	M	50	F	21	US
P6	F	50	F	22	US
P7	F	49	F	19	US
P8	F	47	M	19	Canada
P9	F	49	M	22	US
P10	M	48	M	21	US
P11	F	45	Both[b]	20	US
P12	F	52	F	21	US
P13	M	49	M	21	US
P14	F	46	F	20	US
P15	F	46	F	20	US

[a] P3 and P4 are a couple with one son.
[b] P11 has twins.

15 parents about their use of various media when communicating with their children. To be consistent in what parent-child relationship we were exploring, I recruited parents who had children within the same age range as our first study, 18 to 24, and who were studying outside of Asia. As a result, the ages of these parents fell between 46 to 52. Parents were recruited using snowball sampling as well. Participants (see Table 4.2) included 11 mothers and four fathers, with two of them interviewed together as a couple. Only one of the mothers (P11) had two children, which were twins. Because of cultural norms, I did not ask for any information about parents' income level. However, since middle-class families living in Shenzhen generally own their own apartments and cars, which was reflected in all the parents we interviewed, we were confident that these parents would be defined as middle class (Barton et al., 2013). I interviewed them at cafes and each interview lasted from 30 minutes to two hours. All participants' children studied in North America with one exception: Couple P3 and P4's son studied in the United Kingdom (UK).

I asked participants about the media they used to communicate with their children, topics they discussed, and their wishes. Similarly, no financial compensation was offered, but I bought tea or juice in appreciation of their time. All interviews were semi-structured and audio recorded. I conducted interviews in Mandarin, both participants' and my native language.

4.2.3 Part Three - Data Analysis

After interviews were transcribed, they were coded for emergent themes. We followed the process of thematic analysis (Miles & Huberman, 1994) to code all the transcripts, specifically looking for discussions about interviewees' selection, use, and appropriate on media. We paid close attention to data that addressed the parent-child relationship, including medium preference, frequency of use, and content of communications. Two other graduate students and I worked on the coding process: First, coding the same three transcripts individually, one from students and two from parents. When this first round of coding was complete, we discussed the themes and codes to construct a preliminary codebook. Second, all three of us coded the remaining one-third of the data separately, adding new codes and refining existing codes at the same time. After the transcripts were coded, a final codebook was compiled. We reviewed the transcripts through several iterations using this final codebook resolving discrepancies, and refining codes to ensure that data was coded correctly and the codes were properly categorized.

4.3 Findings

Findings are broken down to several different subsections: the media used by participants, ways each of these media was used, and presentations of self constructed by students and parents. We explore how these presentations of self tied to participants' media use and the breakdowns happened in this self-presentation.

Table 4.3: Study 1 Communication Media Used by Participants.

On WeChat	Other Media
Text messaging	Phone call
Group chat	Skype audio/video chat
Emoji and stickers	Facetime video chat
Audio messaging	Email
Image	iMessage
Sight	QQ
Voice call	
Video call	
Sharing articles	
Moments	

4.3.1 Media of Communication

Participants told us they primarily used media on WeChat for communication, although some other media outside of WeChat were also used sometimes. Table 4.3 summarizes the media used.

Media on WeChat

In this study, text messaging means sending text messages one-on-one, while group chat is the text messaging that involves more than two people. Emoji and stickers can be sent either within one-on-one conversations or group chats, and because they are pictorial representations, we categorize them as a unique medium. Audio messages on WeChat are a maximum of 60 second recordings, generally of speech, sent in a chat. In contrast to text messages, one cannot copy or forward them to other chats. *Sight* (aka *Xiao Shipin*, 小视频), is the WeChat name for a short video clip, with a maximum length of six seconds[1], that users can record and send within any chats. Both voice calls and video calls on WeChat are real-time communications that contain two parties. While WeChat does support voice call

[1] After the completion of this study, the maximum length of a short video clip on WeChat has been increased to 15 seconds.

that includes multiple parties, this was not used by the participants in this study. Sharing articles was coded as an independent medium when it is completed in one-on-one or group chat. For example, when A shares an article with B, the preview of this article will show up as a message in A and B's chat. In WeChat's social network Moments, users can post text and images, as well as share articles — these updates will only be visible to the user's contacts or even smaller groups of contacts, depending on user's privacy setting of Moments. We treat Moments as an individual medium even though it includes several formats of media, because Moments is not offered within WeChat's messenger but as an independent functional section.

Other Media

Participants used other media outside of WeChat, though far less frequently. These media included phone calls, email, Facetime video calls, Skype audio or video chat, iMessage, and QQ (see Table 4.3). While no participants sent letters or postcards habitually outside of our study, we will discuss the students' experiences of sending a postcard as one of the activities of the medium probe. Because almost all media use was on WeChat, in the findings we will only indicate if a media is not part of the WeChat platform.

4.3.2 Each Medium Has a Role

For participants, each medium had a role of its own. The role of each medium was actively constructed when using the medium, and sometimes more than one media were used to form meanings collaboratively.

Media Have Separate Roles

Even though most of the participants relied on WeChat to communicate at the time of our study, not all of them started using WeChat when the students first went abroad. Participants P2, P5, P6, and P8 all said they used to rely on QQ to communicate before WeChat. Other

media used by our participants at the beginning included Facetime (P2 and P12), phone calls (P2, P5, P9, P11), Skype (P5), and email (P3). However, over time all participants settled on WeChat through discussion and practice.

The most used media formats in WeChat were text messaging and video call. Typically, text messaging was used for casual, informal chats and video call was used for more formal and scheduled conversations. There were two major constraints participants considered. The first was time difference. All the participants, except one couple P3 and P4, had a time difference of at least 12 hours between the child and parent. This time difference made it difficult for participants to communicate — they simply could not chat through video when one side was asleep. Four students and nine parents described time difference as a concern in their communications. Compared with video call, text messaging offered asynchronous opportunities and freedom. For example, P1 said she would leave text messages for non-urgent communications to her son even if he was sleeping. The second reason contributing to this distribution of roles between text messaging and video calls was children and parents' lifestyles. All the children were in school, making them inaccessible through video call during their daytimes. Most of the parents, except P4, worked outside of the home, meaning they were also busy during their daytimes. Hence, it was hard for children and parents to chat on weekdays even though there were overlapping times. Five students (S1, S2, S5, S6, and S9) and seven parents, (P1, P3, P4, P9, P10, P11, and P15) told us they would call each other through video mostly on weekends and in China's mornings (*i.e.,* North America and UK's nights). Therefore, video calls were perceived and formed as a scheduled communication that was used weekly, when both were free to chat face-to-face.

The specific roles for video calls and text messaging were constructed, imposing strong influences on the topics discussed through them. S4 and P9 described how they talked about serious topics only through video call, since these topics often ended up eating such a great amount of time that it would be easier for children and parents to just talk, instead of typing down words. As P9 said, "We talk about casual things via text messaging. If

we want to talk about formal business, we will just video chat. Usually it will run more than half an hour and sometimes even over an hour." She then told us that her son recently chatted with her husband, the father, extensively about South China Sea issues through video call. However, while conversations on video chat were often casual or a mix of serious and casual topics, text messaging, was rarely used for talking about serious topics. Topics transmitted through text messaging were various, including news, funny jokes, everyday life events and sometimes quick updates on finance, and so on. Thus, in this case, the content of communication and the medium of communication were closely connected. Kayan et al.'s study showed that Asian users, who were influenced by their cultures, preferred video chatting more (Kayan et al., 2006). Our participants offered some specific reasons for this choice and illustrated that such a choice might not be made due to culture.

Other media have their roles as well. Voice call, similar to a phone call but connected via the internet, was usually perceived as a backup or an alternative for video call by our participants. For instance, S6 said she would initiate voice call only for emergency situations. If the internet stability became a problem, S9, P6, P9, and P10 would compromise by using voice call instead.

Group chat included the nuclear family group of the parents and child or extended family groups with other relatives. P9 and P15 told us that their children rarely sent any messages in their extended family groups. P6, P8, and P13 said their children would only send greetings in extended family groups during festivals or holidays. Email, in contrast to how extensively it is used by Western users (Tang et al., 2009), was solely used by our participants when they had to transmit important files, such as visa documents (P10), financial information (P14), or identification documents (P8, P15). Because participants rarely used email and because of the rapid penetration of smartphones and WeChat in China, email was not a common communication tool amongst our participants.

Media Have Collaborative Roles

Our participants did not only assign roles to the individual medium but also used multiple media together to construct meanings. One common use of text messaging by six students and six parents was that they sent out text messages to check if the other side was available, and then initiated either video or voice calls. This finding is consistent with previous studies (Judge & Neustaedter, 2010). Here, the message transmitted by text messaging was only a signal — the family would proceed to "real" communication only after the signal was sent and both sides confirmed their availability. Text messaging thus became the early entrance to video or voice chat. Another example of using text messaging and voice calls together was offered by P14. Different from others, P14 preferred sending audio messages because talking was faster than typing. But she did mention an exception:

> But if we are going to talk about formal and serious things, then I will usually write them down in bullet points such as one, two, and three, and send them via text messages. After that, we will use voice call to chat. (P14)

In this case, text messages no longer acted like signals, but as a reminder or agenda that P14 would later refer to during the voice call in case she missed anything she wanted to discuss. Contents sent by text messages were still active in the sense that they would be revisited in the voice call. All the findings presented above show what Setlock and Fussell found: Asian users do make deliberate choices when concerning how media can best fit the context (Setlock & Fussell, 2010).

4.3.3 Presentation of the Child: An Independent Adult

Both student and parent interviews suggested that the students worked hard to construct a positive image as an independent and mature adult in front of their parents.

Report Only the Good

In Chinese, there is a saying to describe the consistency of one's behavior when one reports only the good but not the bad, called "Bao Xi Bu Bao You" (*i.e.,* 报喜不报忧). All the student participants said this was the principle they followed when talking to their parents, similar to what have been found by Pan et al. (Pan et al., 2013). S9, currently a freshman, said she would not share any negative news about herself with her parents unless she absolutely had to. She explained to us that she adopted this behavior when she went abroad as a high-school student. S1, describing herself as a typical report-only-the-good person, said she would send text messages in their nuclear family group every single day to let her parents know she was safe and sound.

Photos sent as images through WeChat were also used as a tool to express positive self-image by children deliberately. S4 told us she sent images to her parents very often and she particularly loved sending pictures of the dishes she cooked, demonstrating she could cook foods on her own. We asked her if she would also send photos of dishes she ate outside, she answered, "No, except when I eat something extremely delicious. I will want to share with them, like 'hey, I ate this and it's awesome.' But in most of the cases, I will only send photos of the foods I cook."

This was echoed by 10 parents because their children also sent photos of food they cooked. By sending images of the foods they cooked, the students revealed a sign of their independence and offered proof of living happily abroad. Other than foods, S4 sent selfies to her parents too, even though they talked very often via video call. Photos were also sent by S7 when she was traveling, updating her whereabouts, and sharing beautiful scenery. In P15's case, images were also used by her daughter, an interior design major, to show off her school projects. P15 saw this as evidence of her daughter doing well at school. Photos play a crucial role to display the positive self-image constructed by the children — a picture is indeed worth a thousand words. A more indirect and subtle way to construct a positive self-image was tied to extend family group chat messages mentioned earlier. Children sending

out greetings and blessings on festival or holidays in extended family groups demonstrated to their family that they were polite and caring to other relatives.

Share Concerns, but Only Selectively

Children worked hard to keep a positive self-image before their parents, hence they rarely shared their concerns with their parents. We found, from S4, S6, and P11, that when the children shared their concerns, they shared them selectively, both in terms of with whom they shared and the content they discussed. P11 told us without being asked that her daughter sometimes would share things with her but not her husband. "Usually about relationships," she added. S6 agreed that she would talk about relationships with her mother but not in the family group where her father was presented. S4 explained this from a daughter's standpoint: "For example, I'm going to live with my boyfriend later and rent a new apartment. So, I only discuss this with my mom but not my dad. Dad won't allow it [laughs]. He doesn't know I have a boyfriend."

A Busy Student

Interviews with parents indicated that students constructed an image of themselves as hard-working and busy. P1, P5, P6, P7, P9, and P15 all said their children were obsessed with schoolwork. P7 and P15 described their daughters as "busy during the day because she has to attend classes." P6's daughter told her straightforwardly that she had her own work to do and had no time for random chatting. In contrast to the parents, S7 was the only student who openly mentioned that she was busy, when explaining the reason for her not reading the articles shared by her mom: "I'm busy, you know, and simply don't have time to read them." However, she later told us she was busy because finals were approaching — she was usually not busy at all as a freshman. This contradiction of S7 suggests the students may not be as busy as they present themselves to their parents.

Avoided or Neglected Media

To protect their image, some of student participants avoided using certain media to communicate with their parents. For example, S3, a graduate student who had been away from home for two years, said, "I don't like sending text messages. It's like leaving evidence. I probably don't want to communicate too much with my parents via text, like writing letters or emails. My grandparents sent emails to me before and I felt awkward, and didn't know how to respond. My grandpa used to write poems for me. Awkward. I used to write blogs when I was a little kid, and when my parents saw the posts they made a fuss. So, I don't like writing online."

Text messaging and email were not the only media avoided by participants. Participant S5 sometimes set the visibility of Moments, the WeChat social network, so it could not be seen by her parents. S4 said she did not block anybody from viewing her social updates on Moments but would not post her concerns there if she did not want her parents to see. S6 did not complete any activities listed in the medium probe by using Moments because "I don't use it to talk to my parents." While Moments has common functions that most social networks provide, such as commenting and liking a post, these students intentionally avoided using Moments to reveal part of themselves to their parents.

We tried to capture data about non-digital communication by including in the medium probe a postcard of the students' campus — stamped and ready to be sent. Most students did not use the postcard — even with instruction to use it. Students told us the postcards were awkward, formal, and could be seen by strangers. While some might send them to friends, they would not send them to their parents.

4.3.4 Presentation of Parents: Caring but Not Annoying

Similar to students, parent participants constructed their own image as a caring but not annoying mother/father. This was clearly shown through their use of media.

A Well-Behaved Parent

Most of parent participants showed they cared about their children by being well-behaved in their children's eyes — they used communication media their children preferred (P11), they did not disturb their children when they were busy (*e.g.,* P1), and they replied to their children's messages and fulfilled their wishes as soon as possible (*e.g.,* P3). As P5, a retired father of a junior undergrad student, said, "We (P5 and his wife) are pretty flexible and relaxed because we are both retired. But we don't dare to bother her. She has so many exams, those monthly tests."

This was echoed by other parents (P1, P2, P9, P12, P14). They told us they knew and understood their children were busy with schoolwork, so they supported their children by not contacting them when the children did not have time. In addition, parents were willing to schedule their time around their children's availability. P1 shared with us: "We used to chat around 11 AM on my Saturdays (*i.e.,* China's time) in his first year abroad. Later we changed it to Sundays, because we thought it would be more convenient for him, since it would be his Saturdays."

However, when their children were free or needed help from them, they responded quickly and tried to demonstrate how much they cared about their children. A typical example was when the children were in need of money. P2's daughter had mentioned she was traveling to Germany and needed money; "So I sent her money right away." P11 and P15 also mentioned that when their children asked for money, they would help at any time. P3, a father with his son studying in the UK, sent text messages or recorded videos for his son when being asked how to cook a dish. P7 told us her family had a dog. It was a gift for her daughter when she was in middle school, because she had done well on an important exam. Her daughter cared for the dog a lot and missed it very much after going abroad, often asking P7 to send her Sights of the family's pet. Sights, as mentioned earlier, are six-second video clips. Such a request was not something P7 could reject — she sent Sights only for her daughter to see the pet. Sights are more flexible than video chat — viewing them does

not require both ends to be available at the same time because they are sent as messages. As video clips, Sights can still capture all the lively motions and sounds and were effective in sharing the dog with P7's daughter.

While Smith et al. believed that the medium used for parent-child communication was mainly based on the parents' willingness and ability (Smith et al., 2012), our parent participants behaved the opposite: they placed their children's preferences and schedules among top priorities and used the media their children liked.

"I Don't Worry about My Kid." Really?

Many of the parent participants, including P2, P3, P5, P7, and P9, said they did not worry about their children. However, other statements suggest this might not be true all the time. For example, even though P2 said she had seen her daughter's dorm and chatted with her daughter's advisor so she did not worry about her daughter, she was the one who initiated the video call with her daughter most of the time. This was also the case for P3, P5, P7, and P9. P6, a mother, when being asked whether her husband worried less about their daughter than her, answered, "Yes, definitely. It's pretty obvious. He doesn't talk much when we video chat [with our daughter]. Maybe men don't have much to say. But he does notice and remember everything. Sometimes when I'm on the computer, I will see all the photos he saved — he saves photos sent by our daughter, but he never says anything."

Thus, even if P6's husband did not talk a lot, there were indications he cared and worried about his daughter in other ways — supported by technology since he could save images sent by his daughter. Similarly, when we asked P3 and P4, the only couple we interviewed, whether they worried about their son, P3, the father, quickly answered no, since "it's too far away for us to help him." Although the mother P4 did not disagree with her husband, she revealed her worry later in our conversation. She asked her son to send her pictures of his room because she wanted to see if the room was tidy. Similar to parents wanting to see their children to make sure they were okay, images of food children cooked together with

other positive messages were reassurance for the parents.

Wish to Talk More

Many parents (P2, P6, and P9) asking us if they were "normal" in the amount they contacted their children. While we reassured them they were "normal," this question did highlight that even though these parents worry and care about their children, they struggled to ensure they were "normal" parents, in terms of how often they contacted with their children. We concluded our interviews by asking parents if they wished to talk to their children more often. P1, P3, P4, P6, P7, and P15 answered yes firmly. As P7 said, "Of course I would love to chat with her more. But there's a time difference and all her class stuff. It's not very convenient." Therefore, even though parents worked hard to not to disturb or annoy their children, they indicated their sincere hope was to chat with their children more often, which is different from what have been found by Pan et al.: both parents and children wanted to chat more (Pan et al., 2013).

4.3.5 Breakdowns of Self-Presentations

The presentations of self among our participants included children presenting themselves as independent adults and the parents presenting themselves as caring but not annoying mothers/fathers. While they succeeded in presenting themselves in these ways most of the time, they occasionally failed. The failures marked the breakdowns of their presentation of self.

As part of the medium probe, we asked student participants to "Please share with your parents about something you are worrying about now." S1, a first-year master student, noted on the back of the paperboard this activity that her parents "overreacted." In the interview she explained:

> You asked me to tell them something I was worrying about. I thought for quite a while because I never shared such things with them. I then sent this message:

> "I don't want to gain weight!" But they didn't reply. Later I sent something like "Sigh, I'm worried that I can't find a job." Guess what? They replied right away, asking me what I was thinking and such. A few days later we talked over the phone and I guess my Dad remembered this, because he told me "just come back [to China] after you graduate, don't worry about job or Ph.D." I feel they changed their attitude after I sent that message. (S1)

While S1's self-presentation broke down because of prompts in the study, other images were found to be inconsistent during everyday communication. Oftentimes, WeChat's social network Moments was involved. P8, a mother who could see her son's updates on Moments, told us she would usually reply to them: "Sometimes I don't really understand or am not interested in the stuff he sent. But I will leave a comment like 'Why are you still sending these things? It's late. Go to bed." It was because P8's son had updated on Moments that P8 was able to see he stayed awake at late nights — perhaps not something he should be doing according to his mother.

Some students blocked their parents because of such comments. S7 blocked her Mom on Moments because "she saw my updates before and found me and talked about them. Really annoying. So I decided to block her." We do not know exactly what prompted S7's mother to talk to them about their post, but S7's mother was no longer considered well-behaved but annoying from S7's standpoint. P1, P7, and P13 were all aware that they were blocked by their children. P1 and P13 said they could not see anything from her respective son's Moments. When P1 asked her son about this, he simply answered that he never posted anything. She told us, "I really doubt that." P7's case was slightly different because she got her daughter's news from other parents:

> We have [WeChat] groups with parents. Once one of the parents told me, "Looks like your daughter is having fun." That parent also has my daughter's WeChat [account added] so she can see my daughter's updates on Moments.

> However, I can't see. I would know nothing about my daughter's update, if that parent hadn't told me. (P7)

When parents realized they were blocked by their children, they would think about why they were blocked and what the child was hiding from them. As mentioned previously, some students would deliberately avoid using Moments when it became a tool to communicate with their parents. Other students' image broke down when their parents knew that they were blocked from viewing their child's posts on Moments.

Finally, one might not even care about his/her presentation, and in one case technology helped to highlight this. As described by S8, an undergraduate senior student, his Mom required him to call him through QQ video chat every day. He shared more details with us: "She wants to see me every single day. Yes, every day. I have no choice. However, I can't see her because she doesn't have a camera installed. She uses her desktop computer to video chat with me. She can see me but I can't see her, so I usually do something else at the same time. Otherwise, I'll have to face a blank screen."

S8, although complying with this "requirement" of his mother, wished he could see his mother in the video, even though his mother did not care about getting a camera. We asked why she did not use mobile phone and S8 said it was because the phone screen was too small. S8's Mom, although clearly an engaged mother, considered little about her son's view. If her goal was to construct an image of a mother who was caring but not annoying, we wonder whether her use of technology had betrayed her.

4.4 Discussion and Contribution

Two primary themes emerged from the findings: first, understanding how the choice of medium was a negotiated activity that allowed parents and children to convey nuanced messages with their words and images. Second, parents and children were concerned with self-presentation and used technologies to manage that presentation. In the end, I also reflect

on how findings from this study inform the understanding of user's interaction with WeChat as a platform.

4.4.1 "The Medium Is the Message"

In the Findings, we detailed how students and parents relied on text messaging and/or video call on WeChat to communicate. What made them settle on these media? They experimented with various media in their communication and established their communication norms through adjustments. These norms included the medium used, how multiple media were used collaboratively, the communication time and duration, and topics discussed via a certain medium. Gradually, parents and children arrived at an understanding of the role each medium plays in their communications. They expected the other side to know the role played by medium as well — namely, the message is carried by the medium, as McLuhan famously said, "The medium is the message" (McLuhan, 1964).

The message is also influenced by the parents' and students' use of WeChat. As a social platform, WeChat is an all-encompassing system for users (Lawrence, 2016), but for overseas students, WeChat is home — WeChat is the tool to use when communicating with parents and families in the home country. Thus, WeChat, as a communication medium, also embeds nuanced messages of belongingness and homeland. Hence "The medium is the message" (McLuhan, 1964) is reflected on two levels, one for each medium on WeChat, and the other for WeChat as a whole.

4.4.2 Chinese Culture and the Presentation of Self

In this study, all students indicated that they only reported the good but not the bad, as the Chinese saying "Bao Xi Bu Bao You" says. The students strived to present themselves as independent adults in front of their parents and in some cases leveraged privacy settings and multiple platforms to save face and hide aspects of their life overseas.

Similarly, the parents also framed their self-images as a well-behaved and not a nag-

ging mother/father. The effort brought in to sustain these presentations can be understood in context of Goffman's ideas of "expressions given" and "expression given off" (Goffman, 1959), the pervasive Chinese culture of face saving (Hwang, 1987), which is the kind of effort made to maintain and protect a positive self-image among other people (Upton-McLaughlin, 2013), and China's One-Child Policy. Because the overseas students were the only child in their families, their parents may have high expectations for them (Fong, 2004). In the meantime, since the child was far away in another country, the parents had to work hard to manage how such expectation was displayed so it would not leak inappropriately and make their child annoyed or stopped contacting them. By following the rules of communication negotiated with their children, they saved face for themselves even if they desired more communication.

The medium, thus, carried a serious role of expressing self-image in such a culture-laden online space. The use of different media can lead to a consistent self-image but also breakdowns, as mentioned earlier. "Many crucial facts lie beyond the time and place of interaction or lie concealed within it," said Goffman (Goffman, 1959). Here, the media, the culture, and the presentation of self all connect to form a space of interaction for parents and children.

4.4.3 Understanding User's Interaction with WeChat

In this study, participants used communication and social networking functions on WeChat to keep in touch with their families. Participants chose to use WeChat because WeChat, as one single application, integrated various communication and social functions which made it easier for them to communicate with their children or parents in ways they preferred. Although participants assigned diverse meanings to media on WeChat and used these media to fulfill their own purposes of communication (*e.g.,* constructing positive self-images), in essence, participants used these media on WeChat in ways these media were designed to be used. Thus, participants' interactions with WeChat in this study conformed to WeChat's

design intention: they are within the expectation of WeChat as a communication and social application.

CHAPTER 5

COMMUNICATION VIA EMOJI AND STICKERS

My second study looked into how and why Chinese people send emoji and stickers on WeChat. Emoji (see Figure 5.1) are pictorial representations for facial expressions and other common, mundane objects (Blagdon, 2013). They originate from Japan and are used in online communication widely (Sugiyama, 2015). Stickers (see Figure 5.2) are similar to emoji as they are also pictorial representations. However, compared with emoji, stickers are larger in dimension, being either static or animated, and they must be sent separately without insertion in text messages (while emoji can). On WeChat, emoji are built-in and thus cannot be added or deleted, while stickers can. Two types of stickers are supported by WeChat: customized stickers and downloadable ones offered in WeChat's sticker gallery. Stickers in sticker gallery are presented in "sets," where each sticker set represent a cohesive theme and contains 16 or 24 individual stickers (see Figure 5.2 as an example set). Customized stickers are individual ones uploaded by users from other sources outside of WeChat. Once uploaded to WeChat, these customized stickers can circulate among WeChat users.

Past research in the fields of Computer-Mediated Communication (CMC) and HCI has studied emoji and other similar elements such as emoticons (*e.g.,* <3 as heart). By 2016, CMC researchers had focused mostly on emoticons' non-verbal cues (Derks et al., 2008; Lo, 2008) and their other illocutionary uses (Dresner & Herring, 2010; Jibril & Abdullah,

Figure 5.1: A Subset of All the Emoji on WeChat.

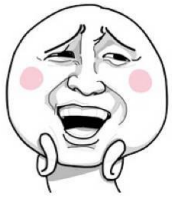

Figure 5.2: An Example of Sticker.

2013), while HCI research on emoji use was still in its early stage of development (J. Y. Lee et al., 2016). Since emoji were getting more popular in online communication around 2016, I was motivated to study them and understand their novel use. China was one of the countries where emoji and sticker first began to flourish, and because WeChat was the most popular mobile instant messenger in China, the Chinese were seen frequently sending emoji and stickers on WeChat — I thus chose to study how the Chinese send emoji and stickers on WeChat. This study contributes to the understanding of user's interaction with WeChat by revealing and investigating a wide variety of previously unstudied appropriations of emoji and stickers (R. Zhou, Hentschel, et al., 2017).

5.1 Data Collection and Analysis

I conducted 30 in-depth, semi-structured interviews of individuals from three different field sites in southern China: Zhijiang county (芷江) and Huaihua (怀化) in Hunan (湖南) province, along with Shenzhen (深圳) in Guangdong (广东) province. Huaihua is a small town that lies on the west side of Hunan. Zhijiang county is a part of Huaihua, containing 301 villages. I visited three villages there and use "Zhijiang county" to refer to them all. My last site was Shenzhen, one of the most developed cities in China. This selection of sites gave the study a reasonable demographic spread across rural, small town, and urban China. All the participants were recruited using a combination of purposive and snowball sampling (Goodman, 1961; Seidman, 2006).

As seen from Table 5.1, participants were between 18 and 63 years old. This was be-

Table 5.1: Study 2 Participant Demographics.

No.	Gender	Age	Location[a]	Smartphone[b]	Years of Smartphone Use	Years of WeChat Use
P1	F	51	Small town	Huawei	2+	2
P2	F	54	Small town	Samsung	3	2.5
P3	F	52	Small town	Samsung	5+	1.5
P4	F	61	Small town	Samsung	5+	1.5
P5	M	25	Small town	iPhone	7	3+
P6	M	58	Small town	Samsung	4.5	2.5
P7	F	52	Small town	iPhone/Xiaomi	4.5	2+
P8	F	18	Small town	Huawei	4.5	0.5
P9	M	42	Rural	OUKI	5+	2
P10	M	63	Rural	Samsung	2+	2
P11	M	27	Small town	iPhone	6	4
P12	F	28	Small town	Samsung	7	4
P13	F	54	Small town	Coolpad	1+	0.5
P14	F	23	Rural	iPhone	2.5	2.5
P15	F	25	Rural	Oppo/Unknown	4+	3
P16	M	43	Rural	Gionee	4+	4+
P17	F	43	Rural	Vivo	0.5	0.5
P18	F	54	Rural	Huawei	3	3
P19	F	26	Urban	Hammer	8	4
P20	M	63	Urban	iPhone	5	5
P21	F	59	Urban	iPhone	5+	4.5
P22	F	39	Urban	Huawei	5	3.5
P23	F	47	Urban	Huawei	1.5	1.5
P24	M	25	Urban	iPhone	6	6
P25	M	27	Urban	Xiaomi	3	3
P26	M	27	Urban	iPhone	10	5
P27	M	41	Urban	iPhone	10+	3
P28	M	27	Urban	iPhone	6.5	4
P29	F	26	Urban	iPhone	5.5	4.5
P30	F	25	Urban	Samsung	8	4

[a] Rural → Zhijiang; Small town → Huaihua; Urban → Shenzhen
[b] Other than Samsung and iPhone, other smartphones were all Chinese branded. P7 and P15 both owned two smartphones.

cause we were keen to study use across ages. Our sample included 12 men and 18 women. Since WeChat only operates on smartphones, we needed to impose smartphone use as a criterion for participation in our study. This ruled out several potential participants in our rural field sites.

The first 18 interviews were conducted in Hunan: seven in Zhijiang and 11 in Huaihua. I then interviewed 12 participants in Shenzhen, the urban city. All interviews were 30 to 60 minutes long and took place at participants' homes, and no compensation was provided. The interviews took place in Mandarin, which is my native language and the official language in China. During each interview, I first asked participants for their basic information, such as their age, devices they used, and how long they had been using WeChat and smartphones (see Table 5.1). I proceeded by asking if they had used emoji on WeChat and how. I also observed emoji on their phones and how they used them. I took notes and kept audio recordings when interviewing. I transcribed all the transcripts in Mandarin and then translated them to English for analysis.

I applied interpretive qualitative analysis to all interview transcripts (Merriam, 2002). The analysis began with open coding (Charmaz, 2006b), in which I assigned short phrases as codes. The first round of coding was done line-by-line within transcripts, so that codes stayed close to data. I proceeded to analyze the first-round codes and extracted themes for a conceptual understanding. The process of analyzing data was iterative that I continuously went back and forth between categories and data to discover patterns and subject data to further scrutiny. Finally, I arrived at distinct themes that highlighted how participants started using emoji/stickers and how they used or did not use these.

5.2 Findings

Findings from this study are structured by describing how people used emoji/stickers to support and complement their use of text, how emoji/stickers were sent in collaboration with a cultural symbol "Red Packet," how emoji/stickers represented users' identities, and how

these use cases have evolved over time such that emoji/stickers have taken on meanings of their own and therefore generating subcultures. I present various ways people democratized stickers and those who did not engage with emoji/stickers as well. Other findings that are more closely related to platform infrastructuralization will be reported in Chapter 9.

5.2.1 Emoji/Stickers for Non-Verbal Cues

We found participants engaged with emoji because emoji offer non-verbal cues that are poorly conveyed by text. In general, when communicating emotions, expressions, feelings, greeting, blessings, and appreciation, they used emoji extensively as non-verbal cues and as "emotion indicators" (Dresner & Herring, 2010). Most participants told us they sent emoji when they felt happy or when they wanted to bless or greet someone along with words for a livelier exchange. This role of emoji also reveals how people intentionally add them to text. For instance, P22 described how she sent emoji at the end of a sentence to help her show happiness. Here, emoji support text without introducing new meanings, serving a more supplementary role by adding non-verbal cues.

Stickers also serve similar function. In WeChat, stickers can either be solely graphical or contain both an image and text. Typically, there are one to ten characters in a single sticker, depending on the information it is trying to convey and whether the meanings of the text and image are aligned. A few participants believed that stickers with text are "clear and complete," because they contain words that people cannot misunderstand. Their main focus was on the text and not the image, which ended up playing a supplementary role.

5.2.2 Emoji/Stickers for Complementing Text

Emoji/stickers also offer important information to complement the text so that emoji/stickers and words can collaborate to form holistic meanings. In some cases, text may not even be present.

Certain types of messages are easier to convey when complemented by stickers than

by inputting text (J. Y. Lee et al., 2016). Behaviors, actions, and attitudes fall into this category. P1 shared how she often sent emoji hugs to her middle school classmates since she would really like to hug them in person. Nearly half of our participants told us they send emoji to express agreement or disagreement.

When stickers are used for adding connotative information, they complement text with meanings it failed to convey. When describing the kind of stickers he saved, P11 said, "Some connotative stickers, such as 'give you a look and you understand it on your own.' Also, ones that feature 'moral integrity shattered all over the place.'" Though the stickers he referred to were customized stickers, they embedded meanings that were rich, subtle, and culturally relevant, so they would likely be very hard to express through text. In these cases, a picture was indeed worth the proverbial thousand words.

Emoji/Stickers can also modify the meaning of text. We observed and discussed with participants how they used emoji/stickers to alter the meaning of text intentionally. P1 said, "Sometimes when it's not appropriate to say something or when you don't have a proper word in mind, stickers will help you to communicate. For example, Zhijiang people use 'the brain-chopper' to curse people. But if you really use this word, it sounds pretty serious. Use a knife [emoji], then it becomes entertaining." This finding differs from Walther and D'Addario's since they believe the negative element, whether verbal or graphical, will make the entire message negative (Walther & D'Addario, 2001). P1, instead, used emoji to lighten the negative tone. P19 shared similar feelings here by telling us she makes sure to add an emoji if she believed her text could potentially hurt those on the receiving end. These examples highlight that users must understand the meanings of both the text and the emoji/stickers, and well enough, to balance their holistic meaning in diverse situations.

One third participants said they use emoji/stickers when they had nothing to say or did not know what to say. P8's reply fell into the former category: "I usually use stickers when the conversation becomes awkward. This means there's no way to proceed." P5 also used emoji when he did not want to talk, which happened frequently when he chatted with his

Figure 5.3: Traditional Paper Red Packets.

Figure 5.4: Digital Red Packets in a WeChat Group Conversation.

older family members. P19 described her use of emoji when she was unsure of what to say. All these participants show that this particular use depends on specific audience and context.

5.2.3 Emoji/Stickers Collaborates with Red Packets

A red packet is a red paper packet used to gift cash (see Figure 5.3). Chinese people traditionally give them to children as a blessing during the Chinese New Year, but nowadays

Figure 5.5: Various Stickers Featuring Red Packets.

they are sent in other situations as well, such as weddings, birthdays, etc. Tencent digitized red packets (see Figure 5.4) for WeChat in January 2014 to support an online experience of this cultural tradition (Wu & Ma, 2017). 14 participants told us they use emoji/stickers when expecting, sending, or receiving red packets and that these emoji/stickers generally take the form of stickers featuring red packets, similar to the examples shown in Figure 5.5. One example was P23, who claimed (and we confirmed) that most of her stickers featured red packets.

Besides stickers that feature Red Packets, we also discovered many other emoji/stickers were used only on certain occasions, such as festivals or holidays, carrying and transmitting distinct cultural meanings. These emoji/stickers must be understood by taking into consideration both the special contexts and the traditional cultural value ascribed to them.

5.2.4 Stickers Represent One's Identity

Emoji/Stickers are not used solely for communication; they are also representations of oneself. Our research found that participants used stickers as a part of their personal identity, regardless of age and location. For example, P11 shared that after becoming a cop, he had become much more aware of his occupation and was keen that his online communication preserve his professional image. Some of his contacts on WeChat were strangers who only talked to him when they wanted his help. He showed us multiple saved stickers that featured cops and told us that he had gotten these from his colleagues.

Other than profession, participants showed awareness of their personality traits and how they conveyed these using stickers. P8, who had just graduated from high school, told us she liked stickers that were "silly and also a bit funny," which (to her) meant that they looked simple and straightforward. When being asked why she chose those stickers, she answered, "Probably because my personality is like them, and I like this simple style since I was very young." These stickers spoke to her because they resonated with how she understood herself. P12 said she sent a particular set of stickers to her female friends in which the

characters looked "capricious and unhappy," because she felt free with these friends. Here, stickers were used with the intention of revealing aspects of oneself with different audiences — this is also how people act in the real world (Goffman, 1959). If the audiences know the sender, they will be able to understand the connection between the sender and the stickers. Otherwise, the audiences can get to know the sender through these stickers, making stickers even more crucial in this communication.

Finally, users also choose stickers because they resemble their physical features. P5 used a sticker just because people thought he looked like the character in the sticker. He provided more details: "Whenever I send this sticker, particularly smiling like this at the end a conversation, people will say 'hey this guy really looks like you' or ask me 'are you this guy?' Later I even imitated this sticker! Then people will respond, 'Oh my God, is this you?"'

All in all, these participants were naturally drawn to stickers that they could relate to for a variety of reasons. They were aware of these tendencies and more than happy to integrate these stickers into their communication, with the hope of constructing a desirable and fitting online image for themselves. We find that as mobile communication develops, sticker use is coming increasingly into focus, both for non-verbal communication and for identity management.

5.2.5 Emoji/Stickers Cultivate Subcultures

Subculture, as defined by Dick Hebdige, is "a subversion to normalcy" (Hebdige, 1991). We talk about emoji/sticker subcultures by discussing how our participants' novel use of emoji/stickers cultivated smaller groups of users that shared distinct beliefs towards emoji or stickers, when compared against the larger user population. We present two examples below.

The "Mysterious Smile"

All emoji/stickers on WeChat has a label. People generally become familiar with underlying meanings of them by looking at their graphical representations and names before sending them out, particularly for new and unfamiliar stickers. It is therefore not surprising that our participants used emoji/stickers as the names suggested, such as using a crying face to illustrate sadness. Nevertheless, this is not always the case. Younger participants from the city or small town appropriated emoji by assigning unconventional meanings to them. The first emoji on WeChat, the ordinary smiley ☺, was originally designed and understood to be a genuine smile (Blagdon, 2013). However, our young participants (P5, P25, and P30) rejected this convention and insisted that it was a mysterious smile that covered all kinds of connotations, such as sarcasm or speechlessness, even though they knew that it was mostly used to indicate an ordinary smile. P5 told us he sent this smiley when he did not really have anything to say or when he did not know how to reply — but surely it was not meant to be a genuine smile. Similarly, P24 saw this smiley as "a fake smile." We found that this alternative interpretation was widely known and accepted among younger participants but not among older users. Older participants, such as P20 and P21, shared that they used this smiley when they wanted to smile or show friendliness. The "mysterious smile" interpretation for this particular smiley was likely determined by age, since participants like P5 and P30 told us that they would not send it to their older family members since "they won't understand." For P8, P24, and P25, even though they used the smiley as a "mysterious smile" in their family groups, they did not bother to explain this connotation and did not care if their families understood.

"Sticker Competition"

A special practice that has evolved in the case of sticker use is the sticker competition, when users exchange stickers for the sake of exchanging them, for showing off the stickers they have, or for collectively putting together a story using stickers only. Three of our

participants, P8, P19, and P25, whose ages ranged from 18 to 27, mentioned that they occasionally engaged in sticker competitions. P19, who was a graduate student, described how she and her roommate used to compete with stickers in 2015:

> We had a WeChat group for the four of us in our dorm. So sometimes we would chat if there was nothing urgent to do for our labs. Since we all had other groups, we saved stickers from here and there, so we would communicate in our group. In general, it was between the two of us, me and a roommate. The other two girls just watched. Basically, when we two received any interesting stickers, we sent them in the group and then started showing off. We would show off when we were terribly bored — 'Hey I saved so many new stickers today' and send tons of them. Then she would say, 'Hey this is interesting. I have received these ones,' then she would send tons of other stickers. It was like that. Back and forth we both saved many, many stickers. We sent stickers for the sake of sending them. (P19)

Instead of sending stickers for nothing in particular, P25 competed with stickers with his friend and they crafted stories without using any text: "We only sent stickers, yes, but stickers could form some stories. For example, I sent this 'eating shit' sticker, she would reply with shit covering the face [sic]. This is actually very funny." We proceeded by asking him if they were showing off, and he answered,

> Not really showing off. It was just a particular type of humor. Sometimes you don't want to talk and when you send stickers, you feel entertained. This is especially the case when I can connect the stickers together, creatively, connect them as a story — it becomes really fun. (P25)

During sticker competitions, the phone screen fills with all kinds of stickers but zero text. Because all these three participants were recalling past experiences when referring

to sticker competitions, we were unable to investigate this practice real-time. According to their descriptions, however, we could see the potential for mobile communication to involve mainly stickers, without explicit need for text. We note, however, that such sticker competitions need users to be relatively familiar with the stickers he or she has. Of course, users must also be fans of stickers for this level of use.

5.2.6 Democratize Stickers

Stickers, unlike emoji, have greater flexibility. WeChat supports users in creating customized stickers elsewhere and uploading to WeChat for communication and exchange. Therefore, the content and design of these customized stickers is under the creator's control, not WeChat's[1]. A few participants took advantage of this flexibility and democratized stickers in one form or other.

Create One's Own Stickers

Two male participants (P24 and P25) were so enthusiastic about using stickers that they created their own stickers. P24, who liked to build things, made a customized sticker to create an animation of his work, so he could share it with others on WeChat more easily. He used a mobile application for image editing called *Meitu Xiuxiu* (美图秀秀) to shoot a short video and transmit it as a gif. After that, he imported the gif as a customized sticker to WeChat, a process he described as "convenient." P25, somewhat differently from P24, made multiple stickers based on the ordinary smiley that we discussed above as the "mysterious smile." In fact, P25's idea of creating his own stickers came from the alternative interpretation of "mysterious smile." He explained,

> This emoji is very magical, this 'mysterious smile.' All the ones I created were based on it. There are plenty of resources online, so I just downloaded the first

[1] At the time of this study, this was true — later on, WeChat started to censor customized stickers as well; not all customized stickers can be sent or viewed on WeChat.

emoji and used it as a foundation and then worked on it in Meitu Xiuxiu. (P25)

He told us how he did not expect people to use his stickers but found that they were soon being circulated by his friends. Together, these examples demonstrate how when users have been actively engaged in using stickers, they turn to creatively making their own and find ways to replace textual representations with their own creations.

Erotic Stickers

During an interview, we would request or be given a chance to take a look at the stickers participants used and saved. When scanning their lists of customized stickers, we occasionally found them saving erotic stickers that presented pornographic visual elements in one way or another. For instance, some of them included graphic representations of penis, while others were snippets of adult videos. P5, P25, and P26 were the only participants that were willing to openly discuss erotic stickers with us. While P5 initially hesitated to show his customized erotic stickers, he eventually opened up and handed us his phone. P25 claimed he did not save any erotic stickers, while P26 said he saved them just for keeping them — not for circulating them, the same as P24. There was a visible gender divide here, since no female participants saved erotic stickers. P1, who had recently retired as a teacher, told us how annoying it was when her male peers sent erotic stickers in WeChat groups: "Only those naughty guys send them."

Because the dissemination of pornographic content is not allowed in China, either online or offline, it can only exist in the form of customized stickers that are made, uploaded, and disseminated by individual users. To the best of our knowledge, these customized stickers were not monitored by Tencent and are thus freely circulated on WeChat, allowing enthusiastic users the freedom to create and share stickers of their choice. P12 mentioned that there were groups in which people would exchange erotic stickers without using a single word — "Why bother, since no text is needed?" The use of customized stickers for pornographic communication is apt since they offer versatile pictorial representations.

An Instructional Sticker

One rural participant, a young woman (P15), was happy to talk to us and told us she owned two smartphones. While one was charging, she showed us the other one. She mentioned that she was not very into stickers but often used emoji: "I'm a mother and I don't have time to play around with those stickers." She also described how she conducted her small business via WeChat. We noticed that the last customized sticker on her list looked more like a screenshot than a regular sticker. When we asked what it was, she clicked on it to show us that it was in fact an instructional sticker for teaching people how to change an iPhone setting: "Some iPhone users don't know how to add the platform (an application her business used), so we will send it to them, as it illustrates the procedure for changing the setting pretty clearly." We present an example here with this instructional sticker, demonstrating that these graphical representations embedded in online communication can effectively convey information without relying excessively on text.

5.3 Discussion and Contribution

Findings above highlighted the widespread adoption of emoji and stickers on WeChat and how the use of these non-textual elements in mobile communication also signals the lessening dependence on text. This rapid and multi-faceted proliferation of emoji/stickers in mobile communication carries important implications, as discussed below.

5.3.1 Emoji/Stickers Can Support Text Communication

As finding show, emoji are frequently used to display non-verbal clues and supplement text. Participants mentioned how emoji helped them to better express their emotions and supported the text in their messages for more accurate and effective communication. Scholars including Derks et al. (Derks et al., 2008), Lo (Lo, 2008), and Dresner and Herring (Dresner & Herring, 2010) have argued for giving importance to non-verbal cues in online commu-

nication. Given this prior work and our findings, we believe that emoji/stickers might be leveraged to compensate for the lack of non-verbal cues in text-based exchanges and/or to simply convey meaning more effectively.

5.3.2 Emoji/Stickers Can Complement Text When Text Is Incomplete

Participants discussed how emoji/stickers could complement text to convey behaviors, actions, and attitudes (*e.g.,* for modulating tone). In these cases, a complete intended meaning is only conveyed when pictorial elements are included. We saw several instances of this. For example, P19 shared that she added emoji to ensure that her texts were correctly understood by her audience. Also, since the Chinese language is often complex and nuanced, the presence of emoji/stickers can compensate for the subtlety of messages, particularly on a text-based communication medium. Several languages other than Chinese, such as Indic languages, tend to require considerable effort from the user for the input of text. Aging users might also find it challenging to enter text on small phone screens. In these scenarios, emoji/stickers could be leveraged for a smoother user experience.

5.3.3 Creative Use of Emoji/Stickers Without Text

Participants took great pleasure in using emoji/stickers for personalizing their communication or for cultural exchanges in ways that would not have been possible with text. The sticker competitions highlighted an extreme scenario of how these exchanges could take place entirely without the use of text. The most active exchange of "red packets" that we witnessed also attests to high levels of engagement during acts of cultural production. Participants also derived happiness from generating and/or appropriating pictorial representations that allowed them to develop their own identities in ways that they valued.

There are real-world scenarios where communication may need to convey silence and individuals may wish to convey silent consent or silent dissent to avoid uncomfortable situations. Young adults might be expected or feel pressure to listen to elders without stating

their opinions. This might also be true for work scenarios where junior employees need to show deference to higher authorities. In such cases, emoji/stickers may be actively leveraged to add nuance to communication and fill in for the absence of appropriate words.

5.3.4 Understanding User's Interaction with WeChat

This study highlights several prevalent, non-textual dimensions to mobile communication and how user-generated and/or culturally relevant emoji and stickers could bring additional, desirable meaning to communication that is primarily text-based. In addition, regarding user's interaction with WeChat, this study presents numerous examples of user's interactions of functions on WeChat that conform to WeChat's design intention (similar to the study in Chapter 4): for example, when emoji/stickers are used for supporting text, such as using emoji/stickers to represent emotions or expressions. However, some other uses of emoji/stickers are, in fact, appropriations (Dix, 2007) of emoji/stickers. One instance is P15, who sent a customized sticker to instruct her customers ways of changing an iPhone setting. Although customized stickers can be animated gifs, they are mostly used for conveying feelings other than instructions. This example of appropriation of stickers shows that appropriating a function is different from using a function as it is designed or intended to be used, because users have to understand a function well enough to appropriate it. As a form of user interaction, appropriation thus goes further than simply using a function as it is designed to be used.

CHAPTER 6
YOUNG PEOPLE'S SOCIAL COMMERCE PRACTICES

When conducting the first study (R. Zhou, Wen, et al., 2017), I had the chance to meet and talk with young Chinese students who were studying abroad. While I did expect them to use WeChat to contact their friends and families in China, I unexpectedly found that some used WeChat to sell goods to people in China. Soon, I learned that journalists had reported similar stories of Chinese students, who were studying in foreign countries, bought products from the country they studied in, and then resold these products to customers in China via WeChat and other online technologies (The Economist, 2017; Williams & Xu, 2017). I was instantly interested in learning why these young Chinese used WeChat to sell goods to China, since WeChat was not designed for commercial but social activities.

6.1 Background

Social commerce is defined as "Activities by which people shop or intentionally explore opportunities by participating and/or engaging in a collaborative online environment" (Curty & Zhang, 2011). While the beginning of social commerce was marked by the integration of social functions to online shopping websites (Swamynathan et al., 2008), recent years, people have also started buying and selling on online social networks, such as Instagram (Gibreel et al., 2015) and Facebook (Jack et al., 2017; Moser et al., 2017). Young Chinese people's buying and selling practice on WeChat is an example of social commerce.

Regarding young people's technology use, scholars have been researching the motivations and practices of young people using technology for quite some time. A few technologies attracted the most attention: the internet (*e.g.,* (Gross, 2004)), mobile phones (*e.g.,* (Woelfer et al., 2011)), online social networks (*e.g.,* (Woelfer & Hendry, 2012)), and games (*e.g.,* (Adachi & Willoughby, 2013; Anderson & Jiang, 2018)). Scholars found that

teenagers used the internet to assuage loneliness and build friendship (Gross, 2004; Gross et al., 2002; Kinnula et al., 2012); they also used online social networks to construct social ties (Requies et al., 2016), explore identities (Dyer, 2017; Woelfer & Hendry, 2012), and engage in politics (J. Chen, 2017; Penney, 2018). Ito et al.'s seminal study dug deep into the motivations behind young people's engagements with technology (Itō et al., 2010). They found young Americans' were motivated to use new technologies mainly for two reasons: friendship and interest (Itō et al., 2010).

While a lot has been researched about young people's technology use, these past studies paid less attention to young people's social commerce experiences (this was also partially due to the novelty of this phenomenon). Similarly, Ito et al.'s study discussed little about young people's technology uses that are not motivated by friendship or interest (but other scholars have touched upon this, for example (DiSalvo & Bruckman, 2011). Having talked with young Chinese who used WeChat for social commerce, I was eager to learn more about this practice since it could extend both on research about social commerce and young people's technology use. I asked, how do young Chinese people use WeChat, a social platform, for buying and selling? What motivate them to engage in this social commerce practice?

6.2 Data Collection and Analysis

As my goal was to deeply understand how and why Chinese young people buy and sell on WeChat, qualitative methods were appropriate. While I set out to find Chinese students who resell foreign products in China, I met, in my preliminary investigation, both these students and other young people living in China who bought and sold on WeChat more often. To recruit these young people, I decided to look in larger, more developed urban regions where people were usually more open to various opportunities and have more freedom to engage with novel technologies compared with their rural counterparts. I selected Beijing and Shenzhen, two of the most prosperous cities in China for conducting this study.

Table 6.1: Study 3 Participant Demographics.

No.	Gender	Age	Location[a]	Role(s)
P1	F	17	SZ	Buyer
P2	F	14	SZ	Buyer, sales agent
P3	M	17	SZ	Buyer
P4	M	17	SZ	Buyer
P5	F	16	SZ	Buyer
P6	M	15	SZ	Buyer, sales agent
P7	M	14	SZ	Independent seller
P8	M	19	SZ	Buyer, sales agent
P9	F	22	BJ	Buyer, independent seller
P10	F	16	BJ	Buyer, sales agent
P11	F	17	BJ	Buyer, sales agent
P12	F	17	BJ	Sales agent
P13	M	21	BJ	Buyer, independent seller
P14	M	21	BJ	Buyer, sales agent, independent seller
P15	M	18	BJ	Buyer, sales agent

[a] SZ is Shenzhen and BJ is Beijing.

I chose to target the age group between 12 to 22, covering middle-school, high-school, and college students. Chinese young people in this age range usually own a mobile phone and are becoming more aware of their own identity and independence as adolescents, albeit still struggling to acquire real economic independence. Different from older generations in China, these young people are also both market-economy native and digital native.

I started recruiting in Shenzhen in 2017. We looked for participants through posting advertisements on our Moments and directly contacting people we knew who might meet these criteria. Once I found several participants to begin with, I reached out to more potential participants through purposive and snowball samplings (Goodman, 1961; Seidman, 2006). Later in 2018, we[1] went to Beijing and repeated the same recruitment process until reaching data saturation (Charmaz, 2006b). In total, we recruited 15 participants (see Table 6.1) and interviewed them one-on-one.

In the interviews, we asked about what, how, and why they bought or sold on WeChat.

[1] I collaborated with researcher Susan Faulkner from Intel when interviewing young people in Beijing.

Interviews were semi-structured, and each took 50 to 90 minutes with most lasting for an hour. Interviews were conducted in coffee shops, at interviewees' homes, or through phone calls. We provided 200 Chinese yuan ($30) for each participant as compensation. With participants' permission, we audio recorded interviews and took notes and phone screenshots. Interviews were conducted in Mandarin, the official language in China.

For data analysis, all interview recordings were transcribed and translated into English. Using the English versions of the transcripts, we followed an open coding process (Charmaz, 2006a). We first started from line-by-line coding to establish an initial codebook. Then, we discussed questions we had regarding the codes. With codes generated from the initial line-by-line coding and the subsequent discussion, we constructed a preliminary codebook. Using this preliminary codebook, we then coded additional interviews, adding new codes to the codebook, met to discuss the codes and resolve any doubts until all the transcripts were coded. After this open coding process, we continued with axial coding (Charmaz, 2006a). We grouped similar codes together to form categories and grouped similar categories to form themes. In the end, we arrived at four themes: buyers, sellers, advantages, and disadvantages of WeChat.

6.3 Findings

Buying and selling on WeChat involve several roles played by participants and specific choices participants made. In this section, I detail a typical transaction process on WeChat, what participants bought and sold, and their reasons for buying and selling on WeChat.

6.3.1 A Typical Transaction Process on WeChat

Based on participants' accounts, they bought and sold on WeChat with a typical transaction process[2]. If a buyer wants to buy a product, they will look for potential sellers by asking for recommendations from existing WeChat contacts. Recommendations are sent to the buyer

[2]For a more detailed explanation of this process, please refer to Chapter 7 section 7.3.2

in the form of sellers' unique WeChat identification QR codes, acting as business cards. Upon receiving a seller's QR code, the buyer can scan it in WeChat and add the seller. Oftentimes, sellers' QR codes can also be found on their Moments or other websites where sellers posted them. After adding the seller, the buyer can look through their inventory in their Moments.

If a buyer has questions for a seller, they can chat with the seller in a one-on-one conversation. When the buyer wants to purchase a product, they let the seller know and the seller will ask for additional information for the product, such as size or color. After the seller tells the buyer the total order price, the buyer can pay by transferring money or sending WeChat Red Packets to the seller. The seller then asks for the buyer's shipping information, ships the order, and sends the order's tracking number to the buyer. The shopping experience is completed when the buyer receives the order.

6.3.2 Buyers

Buyers (买家) make purchases by transferring money or sending WeChat Red Packets in WeChat's instant messenger. Most participants were buyers except P7 and P12, who had concerns about buying on WeChat (we will explain in section 6.3.5). Among other participants, buying ranged from once a week (*e.g.,* P1) to one transaction at the time of this study (*e.g.,* P5). Participants who were buyers purchased a variety of products. Beauty products such as cosmetics were popular among female participants, whereas clothes and shoes were bought by both males and females. Other less commonly purchased products include contact lenses, slimming products, cigarettes, etc. Some products were expensive, costing over a thousand yuan (e.g. $1030, P15's Nike sneakers). Other cheaper, more mundane products ranged from 20 yuan ($3, P4's meal) to 60 yuan ($8.8, P10's lipstick).

6.3.3 Sellers

On WeChat, *sellers* (卖家) advertise their business on Moments, sell goods in instant messenger, and receive payments via money transference or Red Packets. P2, P6, P7, P8, P9, P12, P14, and P15 were all selling on WeChat when we interviewed them. Some of them have been selling for more than a year (*e.g.,* P13) or even several years (P14); others have just started selling a few weeks ago (*e.g.,* P6). P10, P11, and P13 previously sold on WeChat but stopped at the time of this study. We named these 11 participants as *WeChat sellers* (微商), which includes two more specific types of seller: sales agents and independent sellers.

Sales agents (代理) are sellers who get their inventory from a *boss* (老板). Bosses are also sellers; but instead of selling on their own, they recruit sales agents and direct them to sell. Since sales agents do not worry about stocking inventory, they focus on growing their customer base. When a sales agent is more confident of their business skills, they can recruit other sales agents and thus become a boss. Therefore, profits are passed along a pyramid organization of bosses and sales agents, resembling the characteristics of multi-level marketing (Barkacs, 1997). In this study, eight out of 11 sellers were sales agents (P2, P6, P8, P10, P11, P12, P14, P15). While most sales agents ship the products they sell, in some cases they rely on their boss to ship products for them (*e.g.,* P8). Products sold by sales agents cover a wide range, corresponded to the items that buyers purchased (see the section above).

Independent sellers (个体微商) ran their WeChat business alone, without help from a boss. In this study, P7, P9, P13, and P14 were independent sellers. A stark difference observed between sales agents and independent sellers is that the former usually sold physical goods, while the latter more commonly sold services or virtual online goods. Among the four independent sellers we talked to, three did not sell physical products. P7 earned money on WeChat by writing homework for his middle-school peers. A college student (P9) advertised her part-time makeup service on, and was paid through, WeChat. P13 sold virtual items in an online computer game. P14 acted as both a sales agent and an independent seller.

He sold physical products as a sales agent and sold services such as helping people to get refunds from the AppStore, as an independent seller. It appears that for young people, an external resource, such as a boss, was needed to sell physical products. In the absence of this support, or by personal choice, independent sellers turn to services for possible source of income, since services are more flexible in terms of product circulation and storage than physical products. Selling services also largely depends on one's own skills and abilities — all the four independent sellers in this study sold services they were capable of providing.

We asked participants how much money they earned. Some could make a sizeable profit, such as P6 who earned 1000 yuan ($147) and P15 who earned 2000 to 3000 yuan ($300- 440) in an average month. Some earned little or lost money: P12 paid her boss 88 yuan ($13) to start her business selling pets, but she failed to sell any pets. She later decided to sell colored contact lenses instead. Participants who sold on WeChat before but stopped at the time of this study were those who earned little money (P10, P11, P13).

None of these young WeChat sellers were selling full-time, and they did not support themselves through selling on WeChat. While a few participants were adults in the legal sense (*i.e.,* over the age of 18), their daily living expenses were provided by their parents, in part because they were the only child in their families due to the One-Child Policy. Therefore, selling on WeChat was only a part-time "job," although many of them treated it seriously.

6.3.4 Rationales for Buying and Selling on WeChat

Participants had numerous reasons to buy and sell on WeChat rather than on other shopping platforms. They described WeChat as convenient, ubiquitous, and easy for leveraging social relations, and made starting new businesses simple. For many, buying and selling on WeChat also supported exploring future careers, earning money, and gaining independence.

WeChat Is a Necessity

We were interested in learning why participants chose WeChat's instant messenger, a communication feature, to buy or sell goods, since there were many other shopping platforms such as Taobao, and WeChat also has its own shopping function WeChat Store. Participants explained the overarching importance of WeChat in their lives, and why using WeChat's messenger was the most convenient way to buy and sell goods and services.

As a popular mobile instant messenger in China, WeChat is important because most Chinese people use it. We asked P9 if she had used other communication tools. She answered, "Yes, I downloaded other [communication] applications before just out of curiosity, but later I uninstalled them all.... I figured WeChat has more people, so I'm mostly on WeChat."

Besides being used for casual, everyday chat, WeChat expands itself to formal communication scenarios as well. P10, a high-school student, told us her teacher communicated communicated in WeChat groups:

> She will tell us what the homework is at school, but she will also send homework instructions as pictures to the [WeChat] group, which has students and their parents.... This way she doesn't have to repeat the homework in class or call or text everybody, which would be much more inconvenient than posting it in the WeChat group.

Besides communication, WeChat is widely used as a payment tool. P4, P9, P10, P13, P14, and P15 mentioned how they preferred WeChat for money transaction and used different money transaction functions for different purposes. P1's, P2's, and P6's parents sent them pocket money via WeChat's Red Packets. P1 said, "WeChat is convenient to pay. My parents give me money by sending me WeChat Red Packets." P13 also echoed the convenience of WeChat by saying "it's convenient to just send Red Packets when buying things on WeChat." While WeChat can be used to pay orders online, it can also be used to pay

orders offline with WeChat Wallet (Kow et al., 2017). As P9 said, "I no longer carry my purse now and I don't use cash anymore. I just pay with WeChat [Wallet]."

Indeed, WeChat is "sticky" (Y. Chen et al., 2018) in part because it combines communication and payment functions in one application. This integration of diverse functionalities is more crucial when the user has a limited budget to buy their ideal phone with plenty storage space, which was the situation of many participants (*e.g.,* P4 and P9). In general, participants' parents decided what phone to buy for their child, and they would not pay extra for phones with more storage. P10 elaborated by explaining why she used WeChat to pay for goods, but not Alipay (aka *Zhifubao* 支付宝), a mobile application designed especially for online money transactions, to pay:

> For Alipay, I install it only when I have to use it, and I uninstall it when I don't need it. My [phone] space is limited, and I have to free it every now and then. I don't want to delete games, so I delete Alipay since WeChat can replace it.... I think WeChat can both chat and pay, so it's more convenient. It feels like more trouble to open Alipay to pay. When I'm walking on the street and chatting [on WeChat] and if I want to buy a bottled water in a store, I will just hand over my phone with WeChat opened to the salesperson. It's more convenient. I think Alipay is just a payment tool. It's not as good as WeChat. WeChat can do so many things, and I just love to use stuff like WeChat

The word "convenient" was frequently used by participants to describe WeChat, which it seems to express more about how WeChat is ubiquitous in their lives as they study and live in China (Y. Chen et al., 2018; Lawrence, 2016). WeChat appears to be in every corner of their lives, and it is only natural for them to use WeChat no matter where they go and what they do. P4, when complaining about his limited phone storage, summarized WeChat's ubiquity elegantly: "I uninstalled Alipay because it's too big. WeChat is not small either. However, since WeChat is a necessity, it can't be uninstalled."

WeChat Is Where Guanxi Thrives

As noted in the previous section, one of the major reasons that participants chose to use WeChat, rather than other instant messengers, is that WeChat is where the people participants care about, and want to talk to, are virtually hanging out and connecting. In China, connections formed with people are called *guanxi* (关系). When translated directly, guanxi means "relationship." Yet, guanxi also carries more nuanced meanings when used in the Chinese context, as it encompasses other culturally situated concepts such as power, hierarchy, commitment, reciprocity, trust, and more (Gold et al., 2002). Guanxi partly communicates the concept of social capital (N. Lin, 2001), and it is extremely critical to cultivate, manage, and sustain good guanxi with people. Initially, guanxi described connections among people in the real world. But as the internet develops and as people start communicating online, guanxi has come to refer to online human connections as well. In this study, WeChat is where participants kept in touch with and managed their guanxi. They leveraged their guanxi to buy or sell on WeChat and their guanxi was also affected by their buying and selling practices on WeChat.

Participants' guanxi on WeChat first includes people they know from real life and have added to their WeChat network. These people, such as family members, can heavily influence participants' buying and selling. Seven participants told us they saw sellers advertising products on their Moments, who were their relatives (P4), classmates (P3, P5, P6, P7, P11, P13), and friends (P8, P15).

The main goal for some purchases on WeChat was to maintain guanxi. For instance, P13 bought beef jerky from his friend on WeChat to help his friend's business. Besides buying, participants' existing guanxi on WeChat could motivate them to become a WeChat seller. P8 told us he became his friend's sales agent after seeing his friend selling clothes on Moments, and P15 followed his friends into sneaker sales since they all loved sneakers.

Apart from guanxi on WeChat, participants' buying practices were affected by their guanxi as reflected on other websites or social networks outside of WeChat. For example,

by following makeup artists on Bilibili, a video-sharing website, P10 found new WeChat sellers: "I saw some makeup artists wearing colored contact lenses on Bilibili. They wear the lenses and post the WeChat accounts where they bought the lenses. People who want to buy can search for these accounts or just scan their QR codes on WeChat. This is one way I add WeChat sellers." Guanxi on other popular social networks also helped participants look for opportunities to do business and expand business on WeChat. Examples include P2, who was introduced to her boss on QQ (an instant messenger owned by the same company as WeChat), and P9, who advertised herself as a makeup artist on Weibo (a microblogging site). P9 explained how she established connections with future customers, by taking advantage of her existing guanxi on Weibo:

> Basically, I do makeup for customers and then some photographers will take photos for customers; this is how I collaborate with photographers. When I post advertisement of doing makeup on Weibo, I will at (*i.e.,* @) everybody who worked on the photo, including the photographer, so that potential customers will find me [through the photographer's Weibo posts] and add my WeChat.

We noticed that even though this guanxi was outside of WeChat, they connected buyers and sellers to start their transaction process within WeChat. This guanxi, together with the aforementioned existing guanxi on WeChat, forms a robust guanxi network that underpins participants' buying and selling practices on WeChat. As teenagers or young adults, participants were able to reach people that would otherwise be inaccessible without this online network, helping the guanxi converge and thrive on WeChat. Such a convergence is due to the unshakeable role played by WeChat in Chinese people's everyday life as a necessity.

WeChat Makes Starting Business Simple

Because WeChat is not only a social platform but also a money transaction tool, participants found it easier to buy and sell goods on WeChat. When looking at WeChat from the sellers'

standpoint, it is the best application for starting their business. Both P8 and P12 mentioned WeChat's low barrier to entry, compared with other specialized shopping platforms such as Taobao. P12, a high-school student who sold colored contact lenses, explained why WeChat is the best for selling:

> The reason that I have this idea [of selling goods] is because there are many WeChat sellers on WeChat, so I'd also like to take a try. If [selling] on Taobao, you need to first create a store by paying 2,000 yuan ($300). Second, for selling medical supply (*e.g.,* contact lenses) on Taobao, you need to have a business license or some safety certificate. Taobao is more formal; not everybody can do business on Taobao. WeChat is more casual. As long as I guarantee my customers that the stuff I sell is not dangerous or harmful, then I can sell them. If only Taobao existed, then I would not have started selling stuff. Taobao has much higher barrier to entry.

Running a new online business could be a daunting task for a beginner. However, for participants who were sales agents, they met few challenges that would make it difficult for them to start a new business. P2, P6, P10, and P12 were all sales agents whose boss determines what and how they would sell. P2 said, "I sell cosmetics and skin-care products because my boss asks me to sell them. He also has rules of when and how to post ads on Moments." P12 echoed that her boss would even give her a template for posting advertisements. Sales agent P8 had more freedom. He could decide what to sell, even though he could only choose from his boss's inventory. Generally, sales agents followed the instructions of their boss to save time and effort while focusing on interacting with potential customers. Although most sales agents we talked to sold physical products, P10 sold fortune-telling service on WeChat. When she made a sale, she passed along the written fortune from her boss:

> My classmate told me doing fortune-telling could earn money, so I decided to

> try. There was a guy who was a professional fortune teller. He sent us choices, and then we forwarded them to customers. For example, if you want to know about your career, I will let him know you want to check "career." Then he will give you numbers from 1 to 28. You pick one of them, say if you pick 22, and I'll send 22 to him. He starts working on it. After he is done, the result will pass from him to me, and from me to you.

Participants told us that reaching potential customers and advertising one's business are also simpler on WeChat, due to WeChat being a social platform. P8 compared Taobao with WeChat to explain why WeChat is more effective to grow a customer base: "It's okay to do business on Taobao, but there are more restrictions for Taobao stores. Also, it's much more effective to advertise [one's business] on Moments."

Besides WeChat's internal social network Moments, messaging groups on WeChat can be an effective channel for advertising one's business. P14, a senior in college, shared his experience of earning money by doing homework for peers:

> Each university has its own [WeChat] groups. There are many big groups with 500 people for social stuff, such as some communication groups for students in the same cohort. Words will pass along in these groups among people. Say maybe the group owner is my good friend, then I'll post an advertisement in the group and people will add me on WeChat.

Based on participants' accounts, it was relatively simple to start a business on WeChat. It is also a natural place for youth to leverage their existing guanxi through advertising across their current contacts. As summarized by P12, "Selling on WeChat is more casual and better for ordinary people. There's no particular threshold. As long as you want to work on this and you have your supply channels, you can start selling and advertise on your Moments."

Young People Use Technology to Gain Independence

In this study, many participants were driven by their interests to start buying or selling on WeChat, including P1, P3, P6, P11, P14, and P15. For instance, P3 was a passionate movie fan. He shared the reason that motivated him buying on WeChat:

> The first time I bought [on WeChat] was to buy movies. It was for Port of Call (踏雪寻梅). At that time, the movie was no longer available in cinemas, so I had to look for other sources.... I found a guy, a WeChat seller who specialized in selling these [movie] resources. Then I bought it from him because I couldn't find it elsewhere. I told you that I really love watching movies. If there's a movie that I seriously want to watch, I'm going to find it and watch it no matter how.

Similarly, P6, P14, and P15 began selling on WeChat due to their interests. P6 loved headsets, hence he sold headsets; P14 was an intense smoker, thus he sold cigarettes; and P15 was a fan of sneakers himself, so he sold sneakers.

P2, a middle-school girl, was also driven by her interest in cosplay to become a sales agent. Yet, for her, there was another crucial reason for selling on WeChat: "I'm in a super money-consuming subculture: cosplay. One costume costs a lot of money." Although P2's WeChat business was driven by interest, because her parents did not financially support her interest, she had to turn to other money-making opportunities such as selling on WeChat. Likewise, P14, both as a sales agent and an individual seller, echoed P2 in how his lack of money prevented him from playing games:

> Basically, my motivation is my living expenses [from my parents] are not enough. Most of my money is spent on my girlfriend, and then on games. I'm super into games, just like girls are into buying lipsticks or cosmetics. Pretty much the same idea. It's a kind of psychological comparison when us under-

> grads play games together, like "I play better than you and I add more money [to the game] than you." People compete with each other.

In P10's case, she was solely motivated by a desire to make money. She only had 800 yuan ($120) from her parents in a month and hoped to earn extra money to buy colored contact lenses and slimming products.

Participants had other motivations to sell on WeChat such as practicing their skills (P9 as a makeup artist) and helping their parents so that they wouldn't be too stressed by their economic situation (P12). One participant was explicitly motivated by lack of independence and freedom: P7 was a middle-school boy who told us that his parents intentionally broke his iPhone when they believed he wasn't paying enough attention to his studies. P7 wasn't happy; he made up his mind to earn money on his own:

> I didn't ask for money from my parents after they broke my iPhone, except for meals. It was kind of like a cold war. They gave me one of their old phones so they could still contact me, but I bought myself a new phone two or three weeks later. First, I didn't spend money randomly but tried to save them. Second, I earned money from my classmates by delivering food or doing homework for them. If it was for homework, they would send Red Packets to my WeChat; for food, they paid cash.

P7 was pleased with the money he earned selling services to his peers through WeChat and felt that he gained independence from his parents. In fact, most participants who were WeChat sellers were happy that earning money gave them more freedom and independence. P2 said, "My parents will ask me how much I earn this month. They will joke and say, 'buy us breakfast.' The money I earned on my own is completely under my control. I feel very accomplished (laughter)." P6 also echoed that he felt "absolutely awesome" to earn money on his own, and that he "just can't stop," even though his parents told him that he should focus on studying.

Some participants felt selling on WeChat helped them explore future career options. P11 said she would start her WeChat business again when she was in college: "Because I think college students will have more needs for things such as colored contact lenses. If I sell this stuff when I'm in college, I will be able to sell more." In contrast, P13 would no longer sell on WeChat in the future because "it earns too little. Better to have a formal job."

Some buyers were also exploring and putting forward their identity through their consumer networks on WeChat. For instance, P10 was a middle-school girl who enjoyed taking selfies and wanted to appear prettier in those photos. She bought cosmetics, colored contact lenses, and even slimming products on WeChat. The research she did about products introduced her to new networks, which in turn shaped her aesthetic and self-perception.

These experiences of participants' highlight that how Chinese young people are motivated to engage with online commerce by individual, nuanced reasons that are often a blend of economic needs, a desire for independence, their personal interests, and influence coming from friends.

6.3.5 Social Commerce on WeChat Is Risky

While it seems like WeChat is capable of supporting participants from a variety of aspects, it has disadvantages for buying and selling as well. For example, for buyers, it was difficult to return products bought on WeChat. P1 explained,

> It's so much trouble. Full of trouble. I remember one time I bought a formal dress on WeChat. It didn't fit. Basically, to return it, you need to mail it back with 20 yuan ($3) shipping fee. Then it ships a new one to you, which will cost another 20 yuan. You need to pay both fees on your own, because returning on WeChat is not like on Taobao, where you can rely on logistics companies.

Because of the lack of third-party supervision for buying and selling on WeChat, buyers also found themselves vulnerable to fraudsters. Both P11 and P13 had unpleasant experiences with fraud when they bought on WeChat. P11 shared her story: "I bought a dress

when I was in the second year of middle school. It was sold by a friend I knew from the internet. I transferred 60 yuan ($9) to him. Then he asked for my shipping address, phone number, and name. A week later when I asked him for the tracking number, I found that he deleted me on WeChat." P13 echoed that he had met fraudsters on WeChat as well and he had lost more than 1500 yuan ($220).

With these risks in mind, it is understandable that two participants, P7 and P12, had never bought anything from any WeChat sellers. P12 said, "Cosmetics sold on WeChat are either copycats or fakes. Isn't it irresponsible to sell those things that people will use on their faces? It's more reliable to buy these things on certified online stores or in brick-and-mortar stores. I don't buy them on WeChat." P7 also agreed that products sold on WeChat had quality issues: "I don't buy on WeChat because of quality concerns. I don't think it's a matter of whether I trust the seller, because it is a fact that product quality is an issue on WeChat."

Sellers also lose money on WeChat. When P13 was a seller, he encountered a case where he sold a virtual item in a computer game to his customer but never got paid. Similarly, P15 had been cheated by his supplier:

> I have been cheated several times. The person was abroad, and he just didn't ship the order. It included two pairs of sneakers around 3000 to 4000 yuan ($440—$590). I only had his phone number and several mutual friends we both knew. He got my money, then deleted me and all our common friends on WeChat.

For teenage participants, it could be difficult to maintain their businesses on WeChat because they could not attract enough customers. For example, P10 only sold her fortune-telling service for a matter of days and stopped. Earning money on WeChat is also difficult because the products sellers sell may not have a high demand in their guanxi networks, which was the case for P11 and P12. P11 told us her customers were mostly her friends in

the same high school. Since few of them used makeup, they did not have the need to buy cosmetics from P11. P12 also explained why her first attempt at selling didn't work out:

> Pets are really hard to sell. Who has money to buy pets for people around my age? Almost nobody. For buying a cat or a dog, the cheapest price will be 2000 ($300). For a kid, it is very hard for him to pay for such a price. From the perspective of parents, I think they will prefer cheaper pets but not purebreds.... I think parents also trust pet stores more. They don't have much confidence or trust in WeChat sellers.

From these cases, we can see that a limited guanxi network (*e.g.,* peers near the same age) can pose uncertainty to young people's businesses on WeChat. At the same time, parents still have inputs as to what their children can do and buy.

Although WeChat's ubiquity as an all-encompassing mobile application makes participants' lives more convenient, it is not always an advantage to have an instant messenger, a social network, and a payment tool altogether on one single platform. When a seller advertises on the social network, it might hurt their guanxi. P14 elaborated on this:

> I wasn't aware at the beginning, but later I found that every time after I posted some ads on Moments, I also lost many friends on WeChat. They might not delete you, but since people don't like you selling on WeChat, they will block your Moments so they won't see you, as I advertise too much.

In addition, since serving customers is fulfilled by chatting with them on WeChat's instant messenger, some sellers (P6 and P8) could be burdened by heavy and random demands from customers. P6 said, "There are people who are *'kouhai'* (口嗨), meaning that they just keep talking but never buy, like oh-I'm-just-asking that kind of people."

As we presented the numerous ways WeChat supports or hinders participants' experiences, it is clear that the qualities of WeChat being convenient, ubiquitous, easy, and risky

are not mutually exclusive — WeChat has all these properties all at once. While buying or selling on WeChat seems accessible and simple to begin with, it brings other longer-term consequences, such as losing money or hurting one's guanxi.

6.4 Discussion and Contribution

The findings above illustrate how a popular communication technology can be utilized by youths to explore and fulfill diverse needs. I organized insights learned from these findings into three perspectives: the perspective of Chinese social context, the perspective of the technological intentions of WeChat, and the perspective of young people. In the end, I also talk about how participants' interactions with WeChat differs from those in the previous two studies.

6.4.1 Chinese Social Context Shapes Young People and WeChat

This study situates in the context of China. Participants are young people who were in their teens or early twenties, living in Chinese metropoles. These young Chinese are all the only child in their nuclear families and are thus heavily influenced by their parents' high expectations for them to focus on their studies and performing well in school. Still, many of these young Chinese were passionate about exploring new opportunities and lifestyles around them: they chatted with strangers online and became sales agents; they took selfies and applied photo filters to appear pretty on social networks; and they were willing to spend thousands of yuan on goods from Western luxury brands to make themselves stand out. These new experiences generated by China's market economy and participation in globalization could not have been imagined by older generations in China. Buying and selling on WeChat is one example of how young people in China embrace the larger world and seek different lives than previous generations.

WeChat is the most widely used mobile social platform in China, the all-encompassing application that is a "necessity" (P4) to be installed on one's phone if one is in China. Par-

ticipants' experiences showed that as so many Chinese people use WeChat, the traditional, offline guanxi network now also migrate online to WeChat, essentially making WeChat a virtual Chinese society. Some scholars discuss WeChat as distinctively Chinese from other angles such as the business strategy of Tencent (*i.e.,* the company that owns WeChat) and its close relationship with the Chinese government (Y. Chen et al., 2018; Plantin & de Seta, 2019). We agree with them, based on findings of this study, that both WeChat as an all-in-one mobile platform and its irreplaceable role played in Chinese people's lives is unlikely to be replicated in other cultural contexts. WeChat's development and growth required a robust technology industry, a tight-knit relationship between the technology company and the government, and a populace that is comfortable with socializing on a platform that is all-encompassing, thus able to access and share their data.

The peculiarity of WeChat offers a great opportunity to reflect on the reasons behind young Chinese people's social commerce practice on WeChat. Societal changes happening in contemporary China are shaping both the technology, which is WeChat, and the people, who are young Chinese people. Hence, the social commerce practice of young people in China again reminds us of the importance of taking the larger context into consideration when designing technologies for people (Lindtner et al., 2012): The context of technology use always profoundly influences users, technology, and how they interact with each other (Bijker, 1997; Winner, 1986).

6.4.2 WeChat Attracts Young People with Social and Payment Functions

Scholars have researched social commerce practices on different social platforms, such as Instagram (Gibreel et al., 2015), WhatsApp (Kariuki & Ofusori, 2017), and Facebook (Evans et al., 2018; Jack et al., 2017; Moser et al., 2017). WeChat differs from these platforms because it is a social network, an instant messenger, *and* a mobile payment tool. WeChat has payment features to support users' online and offline money transactions, such as WeChat Wallet, money transfer, and Red Packet (Kow et al., 2017; Plantin & de Seta,

2019; Wu & Ma, 2017). It also has a specialized shopping function WeChat Store. However, the young people in this study did not use WeChat Store but instead utilized WeChat's instant messenger and payment functions for buying and selling, because WeChat as a social platform with payment functions is more attractive than WeChat Store. This is supported by comments from several participants noting how convenient WeChat is as a payment tool, and their comparisons between WeChat and Alipay, praising the affordance of chatting with friends and paying transactions in one application. Participants also spoke highly of WeChat because it was effective to advertise on its social network Moments.

Why is it crucial to integrate payment functions and a social platform? One of the critical concerns of social networks is to gather as many loyal users as possible. To attract more users means to address diverse user situations, including the qualities of the hardware users have access to. While users with higher income levels who live in developed regions can access and afford expensive phones with large storage space and fast processing speed, there are also users who can only afford less expensive Android smartphones with limited battery, space, and processing power. Young people in this study fall into this second category. They did not buy their phones themselves: their parents bought phones for them, hence they oftentimes used phones that did not fit their needs to save countless selfies or installing numerous games, "forcing" them to uninstall other applications while retaining WeChat (*e.g.,* P4). If users must make a choice between applications to install and delete, it is safer for a social application to integrate payment functions so that users will be less likely to delete it.

What's more, when payment functions are offered on a social platform, buying and selling on this platform also become performative — users can see if their WeChat contacts have reached out to a WeChat seller on Moments, if they have both added the same seller. For example, when P13 bought beef jerky from his friend to support his friend's business, P13 and his friend's mutual WeChat contacts would see their interactions on Moments, making their interactions a performance or a presentation (Goffman, 1959). This is also

due to WeChat's nature as a social platform with a large amount of users.

For a thriving social commerce, we see the importance of integrating different functions, such as instant messaging, social networking, and money transaction, onto one single platform, making the social commerce user experience more effective. Such a move can also make the platform "stickier" (Y. Chen et al., 2018), "grabbing" more users and user attention.

6.4.3 Young People Leverage Technology to Address Diverse Motivations

Past studies discussed young people's technology use as motivated by friendship or interest (Itō et al., 2010). This study confirms their findings as some participants' commerce practices on WeChat were driven by their interest or friendship. But apart from interest or friendship, this study also shows other motivations for buying or selling on WeChat. P2, the cosplay lover, and P10, once a fortune teller's sales agent, both began to sell on WeChat because of their lack of money to purchase items outside their parent's oversight. While one could argue that these are also interest-driven motivations, without their parents' support, both P2 and P10 lacked critical resources — money — to pursue their interests. Other motivations are more complex than interest or friendship, such as P9 (seller) who sought to practice her makeup application skills and P12 (seller) who hoped to lessen her parents' economic stress. In one case, P7, whose phone was purposefully broken by his parents, was directly driven by a lack of autonomy to earn money from his peers and eventually bought a new phone for himself.

Besides financial motivations, the study identified that buying and selling on WeChat can provide young people with a deeper knowledge about themselves and the world, leading them to independence and maturity. Similar to findings from DiSalvo and Bruckman (DiSalvo & Bruckman, 2011), earning money was crucial beyond the face value; it offered young people an important method for acquiring emotional gain. For example, P2 told us her parents respected her more when she started earning her own money.

Selling on WeChat also gave young people experiences that helped them explore what future career possibilities. P11, after trying to sell on WeChat, determined she wanted to sell on WeChat again after starting college, while P13 did not want to continue to sell on WeChat because it was not a "real" job for him. Sometimes, what these young people learned was unpleasant: Both P11 and P15 were cheated and lost money. These learning experiences afforded them an opportunity to progress along the road toward independence. In these ways, WeChat provided commercial experiences that were rarely available for previous generations in China and allowed younger people to experiment, with relatively low risk, in an online market economy.

Thus, for these young Chinese people, engaging with commerce practices on WeChat is a means to address diverse motivations and goals, including a desire for more independence. When designing new technologies for youth, we should consider motivations that are "serious work" (Kinnula et al., 2012) and understand that some difficult life lessons young people will face are in these technology environments.

6.4.4 Understanding User's Interaction with WeChat

Compared with the previous two studies in Chapter 4 and Chapter 5, this study presents an example of user's appropriation of WeChat: while both the instant messenger and the social network on WeChat are designed for communication and socialization, users appropriate these functions and use them instead for buying and selling (with the help of money transaction features such as Red Packets) — user's goal is not simple communication, but extend to use communication features for commercial activities. WeChat provides communication features but does not envision users to use these features for buying and selling, which also explains why WeChat has more flexibility and fewer regulations for commercial activities when comparing with other professional shopping platforms. The next chapter delves deeper into this phenomenon of social commerce on WeChat by focusing on adults, who have more economic independence than teenagers or college students and thus differ-

ent goals of engaging in social commerce. Adults' social commerce practices are also an example of appropriating WeChat, although with distinct outcomes.

CHAPTER 7

THE TWIN ROLE OF WECHAT IN SOCIAL COMMERCE

In the last chapter, I reported a study I did on Chinese young people's social commerce practices, focusing on young people's motivations of using WeChat for buying and selling. When conducting that study, I became more interested in learning how people engage in social commerce on WeChat in general, instead of solely looking at teenagers and young adults. I learned that compared with youths, there were more adults engage in social commerce on WeChat. Many of their social commerce practices were different from youths, for example, they bought goods from foreign countries and resold them in China, resembling characteristics of a grey market (see section 7.5 for more discussion on grey market). At the same time, I was still interested in WeChat: as an all-in-one mobile platform, how does WeChat influence social commerce among adults, who are not only more mature than young people but also more economically independent? I thus conducted a study that aimed at understanding the role played by WeChat in social commerce by focusing on adult buyers and sellers.

7.1 Background: Social Commerce and Guanxi in China

Social commerce is defined as "activities by which people shop or intentionally explore opportunities by participating and/or engaging in a collaborative online environment" (Curty & Zhang, 2011). It can take place on e-commerce sites with social functions or on social networking sites (SNSs) that have been appropriated to support commerce. Early research on social commerce saw it as a combination of e-commerce sites and social functions. Later, scholars challenged this view and argued that "social commerce is an interdisciplinary subject that simultaneously concerns business, technology, people, and information" (L. Zhou et al., 2013). Thus, social commerce is about people who participate in it, information

circulates in it, business and management it operates on, and technology that mediates it.

A key cultural concept that characterizes commerce in China is Chinese people's interpersonal dynamics and relationships: *guanxi* (关系). Guanxi refers to the interpersonal social relationship between two individuals. It "defines the rudimentary dynamic in personalized social networks of power and it has a focus on tacit mutual commitments, reciprocity, and trust" ("Guanxi", 2020). One either has a guanxi with someone or one does not (*i.e.,* when one does not know the person). Although guanxi seems to be highly similar to social relationship, it differs fundamentally because the key to maintain one's guanxi with others is to perform reciprocal favors (Ostrowski & Penner, 2009). When one says they have many guanxi, it means one knows a lot of people from whom one could cash in favors. Apart from quantity, guanxi is also about quality: a spectrum that spans from positive to negative guanxi. *Guanxi network* (关系网) contains all the interpersonal social relationships a person builds with others. It is critical to cultivate and sustain good guanxi with a large network of interrelated people in the Chinese society, since guanxi "lies at the heart of China's social order, its economic structure, and its changing institutional landscape" (Gold et al., 2002).

It is thus not difficult to see the crucial role played by guanxi in commercial activities in China. Past literature found that for a business to flourish in China, sellers need to establish good guanxi with buyers by performing reciprocal favors and building trust (Gold et al., 2002; D. Y. Lee et al., 2005; Martinsons, 2008). On Chinese SNSs, this good guanxi between buyers and sellers can be cultivated with the support from people whom buyers connect with (Bai et al., 2015; J. Chen & Shen, 2015; H. Liu et al., 2016). Ou et al. characterized the fast-formed guanxi built between a buyer and a seller during their online interactions as *swift guanxi*, which "consist of mutual understanding, reciprocal favors, and relationship harmony" (Ou et al., 2014). They argued social technologies could help build swift guanxi and support social commerce (Ou et al., 2014).

Therefore, as a technology that contains both instant messenger and social network,

WeChat could be an appropriate medium for social commerce. While past studies acknowledged the positive impact of WeChat on social commerce as a social networking tool (Q. Li et al., 2018; J. Lin et al., 2018; Zheng et al., 2017), it is unclear what role WeChat might play as an all-encompassing application. For example, how do people use of WeChat, as a powerful all-in-one platform, impact their guanxi and social commerce? I will investigate the role of WeChat in social commerce by attending to the usages of various functions on WeChat and taking WeChat as an all-encompassing mobile platform.

7.2 Data Collection and Analysis

In 2018, we[1] went to China and interviewed 26 participants. To recruit participants, we posted advertisements on our Moments, asking to interview the following individuals: (1) people who are *daigous* (代购) — professional surrogate shoppers who travel to regions outside of mainland China to purchase products and then come back to China to resell these products on WeChat; and (2) people who use WeChat's messenger to buy from daigous. We started recruitment with daigous because in recent years, journalists reported that many daigous used WeChat for resale (Eddie, 2016). We also asked people we knew to spread the word and requested our initial participants to recommend other potential participants for us, utilizing purposive and snowball sampling schemes (Goodman, 1961; Seidman, 2006). In the initial set of interviews, participants told us that many sellers on WeChat were not daigous, but people who sold items from the inventory of small multi-level marketing organizations[2] or their own handmade items. We thus recruited these types of sellers as well. Recruitment concluded when reaching data saturation (Charmaz, 2006b), which resulted in 26 interviews in total: 14 in Beijing and 12 in Shenzhen, with 23 females and three males. This gender skew reflects the gender distribution of sellers on WeChat (iResearch, 2017).

[1] I collaborated with researcher Susan Faulkner from Intel when interviewing participants in Beijing.

[2] Multi-level marketing, or pyramid selling, is "a marketing strategy for the sale of products where ... earnings of the participants are derived from a pyramid-shaped system. ("Multi-level marketing", 2020)" Examples of company that utilized multi-level marketing include Avon and Amway.

Table 7.1 offers detailed participant information.

Interviews were semi-structured (Seidman, 2006). We asked participants questions such as "Why do you buy or sell on WeChat?" "How do you use WeChat to buy or sell?" and "What do you think about WeChat for buying or selling? Interviews lasted between 60 to 90 minutes, with an average time of 80 minutes. We conducted interviews in participants' homes or public spaces such as coffee shops or restaurants, providing each participant with 350 Chinese yuan ($50) as compensation. With participants' permission, we audio recorded interviews and took pictures of their phone screens. All the interviews were conducted in Mandarin.

After data collection, I transcribed all the interviews into Chinese. We then identified what parts of the interviews that needed to be translated (*e.g.,* participants' use of WeChat for buying and selling) and what could be documented but omitted from word-for-word translation (*e.g.,* the number of contacts they had on WeChat). I translated all relevant parts of the transcripts from Chinese to English. With all the English transcripts, we analyzed interview data iteratively using thematic analysis (Miles & Huberman, 1994). We read a few transcripts separately and identified preliminary themes from them. Then we discussed these themes and came to an agreement on a final set of themes. Using these themes, we read through all the transcripts, highlighted data where themes showed up, and discussed with each other regularly to make sure their understanding was coherent. In the end, we grouped similar themes together to form higher-level themes.

7.3 Findings

7.3.1 Buyers and Sellers

All 26 participants were buyers on WeChat and 19 of them also sold goods on WeChat. Buying on WeChat is consistent across participants, meaning one purchases products in WeChat's instant messenger. Selling on WeChat is different from buying in that it involves

Table 7.1: Study 4 Participant Demographics.

No.	Gender	Age	Location[α]	Employment Status[β]	Role(s)
P1	F	25	BJ	Full-time employee	Buyer
P2	F	23	BJ	Full-time employee	Buyer
P3	F	30	BJ	Full-time employee	Buyer, daigou
P4	F	30	BJ	Full-time employee	Buyer, daigou
P5	F	27	BJ	Full-time seller[γ]	Buyer, sales agent, boss
P6	F	26	BJ	Full-time employee	Buyer
P7	F	32	BJ	Full-time employee	Buyer, sales agent
P8	M	25	BJ	Part-time employee	Buyer, sales agent
P9	F	22	BJ	Graduate student	Buyer, sales agent
P10	F	30	BJ	Full-time employee	Buyer
P11	M	25	BJ	Full-time employee	Buyer, sales agent
P12	M	27	BJ	Full-time employee	Buyer, sales agent
P13	F	27	BJ	Full-time employee	Buyer, daigou, sales agent, boss
P14	F	29	BJ	Full-time employee	Buyer, daigou
P15	F	35	SZ	Stay-at-home mom	Buyer, sales agent, boss
P16	F	28	SZ	Full-time employee	Buyer, independent seller
P17	F	34	SZ	Stay-at-home mom	Buyer, sales agent
P18	F	28	SZ	Full-time employee	Buyer
P19	F	35	SZ	Part-time employee	Buyer, daigou
P20	F	33	SZ	Stay-at-home mom	Buyer, daigou
P21	F	32	SZ	Full-time seller	Buyer, daigou
P22	F	35	SZ	Full-time seller	Buyer, independent seller
P23	F	26	SZ	Graduate student	Buyer, daigou
P24	F	23	SZ	Full-time employee	Buyer
P25	F	26	SZ	Full-time employee	Buyer
P26	F	24	SZ	Full-time employee	Buyer, daigou, sales agent

[α] SZ is Shenzhen, and BJ is Beijing.
[β] Participants' formal employment status outside of buying or selling on WeChat.
[γ] Full-time sellers sell on WeChat as their full-time jobs.

diverse strategies. Based on these strategies, we identified four types of sellers[3] (see Table 7.1): *daigou*, *sales agent* (代理), *boss* (老板), and *independent seller* (个体卖家).

Daigous 'take advantage of their geographical locations' (P20) to buy products from outside of mainland China and then carry them back to resell to customers in China. We talked to nine daigous, who sold products acquired in Japan, South Korea, Hong Kong, and the United States. They traveled as frequent as once per week to once every three months. Some started their daigou business in the past six months; others had been daigous for over five years. Daigous sold beauty products, health-care products, luxury goods, and baby products. Their monthly net revenue spanned from 3,000 yuan ($450) to 30,000 yuan ($4,500).

Sales agents are part of a multi-level marketing organization ("Multi-level marketing", 2020). Different from daigous, they sell products obtained from a boss or a supplier, and these products are acquired through WeChat as well. After receiving the products, they resell these products to customers on WeChat. This means sales agents can save more time for growing customer base and improving customer service than daigous since sales agents do not travel. Of the 10 sales agents we interviewed, some of them had been sales agents for three months, while others had been selling for over three years and had become bosses, recruiting sales agents to expand business. Products sold by sales agents included clothes, shoes, high-quality counterfeit luxury products, homemade food, travel arrangements (*e.g.* flight tickets), and daily necessities such as pesticides. Sales agents' monthly earnings varied from less than 3,000 yuan ($450) to more than 30,000 yuan ($4,500).

Finally, there were independent sellers P16 and P22, who bought materials and then hand made products to sell, such as leather notebooks or birthday cakes. Both of them had been selling on WeChat for three years, and they earned 5,000 yuan ($750) to over 10,000 yuan ($1500) in a month.

[3] Two of these four types (sales agent and independent seller) are the same as identified in Chapter 6 section 6.3.3.

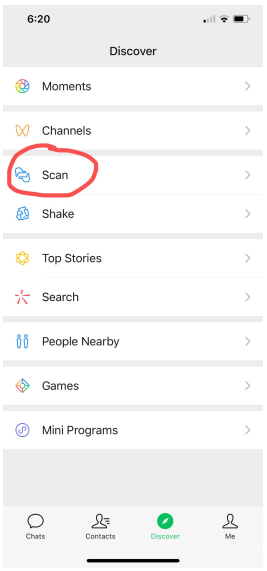

Figure 7.1: Access QR Code Scanner.

Figure 7.2: Pay Seller with Red Packets.

7.3.2 An Overview of Social Commerce on WeChat

Participants' social commerce activities utilize WeChat's instant messenger, its social network Moments, payment functions (*i.e.* money transfer and Red Packet), and QR code scanner (see Figure 7.1). In a typical social commerce interaction, buyers first need to add sellers on WeChat by receiving and scanning sellers' unique identification QR code on WeChat. Oftentimes, sellers advertise themselves by posting their WeChat QR codes in WeChat's instant messenger, on Moments, and elsewhere outside of WeChat. If seen within WeChat, these codes can be shared by sellers' existing WeChat contacts to other buyers; if seen outside of WeChat, buyers can scan the codes in WeChat to add sellers. Once the seller is added, the buyer can look through the seller's advertisements in their Moments. If the buyer is interested in a product, they can chat with the seller in instant messenger. When the buyer decides to purchase, they pay by transferring money or sending Red Packets to the seller in their chat (see Figure 7.2). Upon receiving the money, the seller prepares the order and ships it, sending the buyer an order tracking number via instant messenger. The whole process completes when the buyer receives the order. This entire buying and selling process can be, and often is, completed solely on WeChat, using different functions on WeChat.

We found social commerce on WeChat deeply intertwines with guanxi in three ways:

- First, social commerce begins from guanxi. Existing guanxi of buyers and sellers on WeChat, such as friends and family, provide connections between buyers and sellers who did not previously know each other.
- Second, once buyers and sellers are connected on WeChat, sellers need to cultivate long-term guanxi with buyers and strengthen it, so their WeChat business can develop further. To cultivate good guanxi, sellers use a variety of ways to demonstrate they are reliable and their products are high-quality. Buyers also have other means of checking product quality.
- Third, social commerce activities may negatively affect buyers' and sellers' existing guanxi on WeChat if, for instance, sellers post too many advertisements on Moments. By risking guanxi, social commerce on WeChat also risks itself.

As both the medium and the mediator of social commerce, WeChat influences the relationship between social commerce and guanxi. The following sections will detail multiple aspects of the relationship between social commerce and guanxi, and how WeChat affects this relationship.

7.3.3 Buyers and Sellers Establish Connections through Existing Guanxi on WeChat

Previous literature found that support from existing social relationships on social media help facilitate transactions between buyers and sellers (Bai et al., 2015; Bao & Volkovynska, 2016; J. Chen & Shen, 2015; Liang et al., 2011; Lu et al., 2016; Shin, 2013). On WeChat, existing guanxi supports buyers and sellers to establish connection, a crucial prerequisite for transaction. All participants expressed how their existing guanxi on WeChat helped them connect with buyers or sellers, and thus engaged with social commerce.

Sellers told us it is more effective to start from selling to people in their guanxi networks. All the sellers we interviewed started selling on WeChat to people they knew, such as friends

and colleagues, who are part of sellers' real-world guanxi network. For sellers, people who they have already built guanxi with are trustworthy, and because of this guanxi, these people often feel responsible or even obliged to support sellers' businesses. While e-commerce websites have features to prove sellers' reliability (*e.g.* seller's rating), WeChat lacks these features. As P19 pointed out,

> Because the selling process on WeChat is fulfilled on Moments and there is no third-party assistance, trust is super important in this process. Thus, in general, sellers start from selling in their guanxi network, such as among friends. This way the cost of building trust is reduced.

For buyers, existing guanxi on WeChat is crucial because it is a reliable guarantee of product quality, and buyers cared about product quality seriously. For instance, P17 used to buy diapers from JD.com, one of the biggest Chinese online shopping platforms that claims to only sell high-quality products. Yet the diapers she bought from JD.com "felt entirely different" from the ones she bought in Hong Kong, even though these diapers were produced by the same brand — the ones bought on JD.com felt rougher.

Because buyers worried about getting low-quality products, many of them turn to their reliable guanxi on WeChat. P2 preferred to buy from daigous on WeChat because she knew them in person — they were people in her guanxi network from real life. P25 was similar; she only bought from sellers on WeChat who were introduced by somebody she trusted in her guanxi network. P7, a mother of a toddler, went even further that she did not trust any daigous but her cousin who lived in New Zealand to buy baby formula for her: "For quality-sensitive products like baby formula, I won't buy from daigous. It's not safe. I don't mean that daigous are selling fake products, but maybe their source of purchase is unreliable, and they don't even know."

Indeed, buying from sellers who are part of one's guanxi network (P6, P7, P10, P18, P24, P25) or who are recommended by people in one's guanxi network (P1, P2, P6, P10,

P24, P25), is the most important reason for buyers to buy on WeChat with confidence. P6 explained,

> I usually buy from daigous I know or daigous recommended by people I know on WeChat. For those I know, they were my classmates or colleagues. Some of them went abroad for higher education and some stayed abroad after they graduated. Some colleagues immigrated to countries such as the US. For those recommended, I only buy from the ones who were recommended by people I truly trust, such as high-school peers or colleagues with really good guanxi.

While e-commerce websites also have social functions for building connections, WeChat outperforms them because it starts off as a social platform, which encourages close and direct communication among users. Later, when WeChat attracted more and more users, users' offline guanxi networks migrate to WeChat, and WeChat then became the space where offline, trustworthy guanxi presented online (Y. Chen et al., 2018; Plantin & de Seta, 2019). With these guanxi from offline acting as conduits, it is easier for buyers and sellers to build connections and trust — both are crucial for a successful social commerce experience.

7.3.4 Sellers Cultivate and Strengthen Guanxi with Buyers through Demonstrating Product Quality with Technology

Overall, what participants cared the most when making purchase was product quality, which they often used the term "authenticity" to refer to both the authenticity of the brand and the product's high quality. For example, P24 and P25 did not mind waiting for several weeks for daigous to bring back products from abroad, so long as the products were truly bought from abroad with high-quality. P3, a daigou who purchased her inventory from Japan, gave us a clear list of priorities of buyers' concerns: "Customers buy from us out of three major reasons. Number one is product authenticity; this absolutely comes the first. Number two is speed. Number three is price."

(a) Location on Top Left Shows P14 Was in Japan

(b) The Title of This Post Says "Paying for chocolate and cakes at the airport"

Figure 7.3: P14's (daigou) Moments Posts Showed She Was Buying at an Airport in Japan.

Therefore, the ability to demonstrate product quality is pivotal for sellers to cultivate their newly established connection with buyers into long-term guanxi and further strengthen this guanxi, which will then help sellers maintain existing customers and grow reputation. Participants who were sellers utilized multiple strategies to demonstrate product quality, oftentimes involving technology.

First, daigous (P3, P13, P14) actively posted photos and videos when they were buying abroad, taking advantage of the location-tagging feature on Moments. They knew their customers would like to see they did buy products from other countries. P3 said, "I will post photos with my locations on Moments when I'm in Japan. Isn't it that WeChat only allows you to tag your photo with a location unless you are really at there?" Figure 7.3 shows P14's Moments posts, showing she was buying at an airport in Japan.

Second, for those sellers (P15, P22) who hand made and sold food, they used their phones to document product ingredients with extensive written descriptions and photos.

P22, a mother who sold homemade birthday cakes, made sure she addressed her customers' concerns about ingredients in cakes through photo documentation:

> There are several common questions customers ask about our ingredients, such as where we get them. For these questions, I shoot photos and add descriptions for each of the ingredients. For example, the cream I used is from [brand] and the flour is from [brand]. I buy eggs at [a well-known local store]. Other ingredients are bought at [a specialized store for baking materials]. I save these photos and descriptions in my phone, so whenever customers have questions, I can answer them immediately.

While sellers demonstrate product quality to cultivate and strengthen guanxi, buyers also check product quality so they can tell if a seller is continuously reliable to buy from. A common strategy buyers use for checking product quality is to scan the product's QR code on WeChat. As P1 explained,

> The way I check [product quality] is primitive. I just use WeChat to scan the QR code on the package of the product. When you scan it, you can find its place of origin. If after scanning I still can't find any meaningful information of the product, which happened before, I will never buy it again.

Apart from scanning product QR codes, buyers also used specialized applications for checking product quality. These specialized applications have experts who can judge if a product is high-quality; sometimes, the application itself can examine the product's quality too. P10, a buyer who liked purchasing luxury products, told us how to check if a pair of expensive sneakers is authentic: "There are some websites and applications, such as *Hupu* (虎扑) and *Du* (毒), in which you can upload photos and ask experts to determine [product quality] for you." Likewise, P6 used a mobile application called *Meili Xiuxing* (美丽修行) to check ingredients in beauty products and then compared these products' effects to their labelled ingredients to determine product quality.

Besides using technology such as WeChat, participants also utilized other means for checking or demonstrating product quality. For example, buyers determined product quality based on previous experiences with the product (P6, P17) and used price as an indication for product quality (P8, P10). Sellers were transparent with customers of potential risks involved in purchasing (P5, P12, P19), and they educated customers to judge product materials and quality (P16).

Through demonstrating product quality, sellers cultivate and strength their guanxi with buyers, and buyers then recommend sellers to people they know. This is how sellers grow customer base and earn reputation on WeChat. The process of strengthening guanxi with buyers is direct and intimate because of WeChat's instant messaging. As P4 said,

> When I open the interface of WeChat, I feel much closer with customers. I can message them, send videos to them, and start video chat or audio chat with them. We can also share some other stuff. Say if I see something interesting on other apps, I can send the link to them directly on WeChat, and we can then chat about it.

7.3.5 Using WeChat for Social Commerce Can Hurt Guanxi

While past literature focused on the positive aspects of social commerce on WeChat (J. Lin et al., 2018; Sun et al., 2016), there are negative aspects as well. One of the most evident disadvantages of social commerce on WeChat results from sellers' frequent advertisement on Moments. While advertisement helps customers learn about sellers, it also annoys sellers' WeChat contacts, who are people in sellers' guanxi network, and thus hurts the long-established, precious guanxi between them.

As both buyers and sellers, P5, P16, and P23 expressed frustration of seeing too many advertisements on their Moments. P23 said,

> Some people on my WeChat were classmates from primary school or middle school. We didn't know each other very well before, but once I added them

> on WeChat, I feel much closer to their lives since I can see their Moments. However, when some of them became WeChat sellers, it's extremely obnoxious because they kept posting advertisements screen after screen. I'm slow on blocking people so sometimes I can see all these ads. They are way too annoying.

Participants hid these advertisements on their Moments by blocking those who posted them, and sellers were well aware that they were blocked. P21 said,

> I have been blocked by many people. Some even post on Moments and say, "while others are posting photos with families and friends during the Spring Festival, there are some daigous who are still flooding advertisements." Daigous are looked down upon.

P13 thought posting too many advertisements would risk her guanxi, so she tried to sell in WeChat Store instead. However, few people showed up in her WeChat store, so she had to return to Moments for advertising. P7's solution was to create a group for more active customers and only post advertisements in this group. P16 was conscious of how people perceive her, so she restricted herself to post at most five advertisements in a day to avoid annoying her WeChat contacts. "Too many ads make people feel you are thoughtless," she explained.

While social commerce helps sellers establish connection with buyers through existing guanxi, it also complicates sellers' guanxi with friends and families and even put such a precious resource at risk. P3, P12, P15, P19, P20, and P21 all said they preferred not to sell products to their friends or family. P3, a daigou, told us,

> Family members who buy from me think I should not charge them money for bringing products back for them. But it is impossible to not charge them, because running daigou business is my job. It's hard to balance this guanxi: if I charge them, they get hurt; if I do not charge them, I don't earn money.

As mentioned before, the Chinese manage their guanxi with extreme caution (Gold et al., 2002). Hence, it is understandable that sellers, such as P12 and P14, would rather lose money than risk their guanxi. P12, a sales agent who made travel arrangements, shared his experience with us:

> I once booked a hotel room for my friends. But when their travel time approached, the hotel told me the room was not available anymore. Since I was afraid of damaging my guanxi with them as friends, I decided to spend my own money to book another hotel for them, meaning I was paying out of my own pocket.

P12 was wary of similar cases in the future, thus later he decided to only sell to strangers but not to people he knew. He even registered a new WeChat account specifically for doing WeChat business. He said, "It's hard to deal with friends. For other customers [who are strangers], I can just do business and talk about money.'

According to previous literature, buyers seem to be easily cheated by sellers (Bort, 2014; Garg & Niliadeh, 2013; Oravec, 2014). But we found that sellers (P20 and P21) could be cheated by buyers as well. One might think existing guanxi between buyers and sellers would prevent this from happening, but it was exactly due to the presence of guanxi that made sellers vulnerable. P21 said,

> For old customers, I sometimes pay for their products in advance and they will send money to me later. But in one case I never got my money back. She was my college peer. She wanted an iPhone 6 when it was newly released several years ago. To buy the phone, I asked somebody in Hong Kong to reserve an order ticket for me so that I could buy it in that Apple store in Hong Kong, because you had to have a Hong Kong ID to reserve a ticket for buying. The phone was more than 4,000 yuan ($620). Whenever I asked her about this money, she just avoided talking about it and promised she would pay me. I

> waited for a very long time because I thought she was my college friend. But she never paid. Eventually I deleted her WeChat.

Therefore, even though social commerce on WeChat is based on guanxi that helps build connections between buyers and sellers, it has limits too. Because WeChat is fundamentally a social application, using it for commerce can damage people's guanxi — a resource that is often considered more important than money in China.

7.4 Discussion and Contribution

Findings above reveal how social commerce on WeChat mingles with guanxi, and how intertwining technical functions of WeChat play both a positive and a negative role in affecting the relationship between social commerce and guanxi.

Social commerce on WeChat is built from guanxi because buyers and sellers rely on existing guanxi, on WeChat, to connect. Thus, this study confirms what previous literature found: with access to a great number of social connections on social platforms, buyers and sellers can establish initial connections more easily, which will encourage buyers to adopt social commerce and sellers to run social commerce business (Z. Huang & Benyoucef, 2013; Lu et al., 2016; Stephen & Toubia, 2010).

While previous literature on social commerce on WeChat found that the "swift guanxi" built between a buyer and a seller during their interactions for transaction is significant for the success of social commerce (J. Lin et al., 2018), findings from this study instead show that sellers, after establishing an initial connection with buyers, care more about cultivating a long-term guanxi with buyers and strengthening this guanxi. This long-term guanxi is achieved by sellers demonstrating the high-quality of their products, leveraging technologies both on and off WeChat, and through buyers confirming product quality with these technologies. By offering reliable guanxi with easy accessibility, and by providing functions that sellers and buyers can use for building long-term guanxi, WeChat exerts positive influence on social commerce.

We also found that social commerce, because it runs on a social platform, may damage sellers' precious guanxi. For example, sellers may create an imbalance on their social network, with too many advertisements making them a nuisance rather than a valued connection. If selling to people in their guanxi network, a seller may also risk guanxi because there is a tenuous line between money-making and reciprocity. While the former is important for the seller, the latter is how one establishes more and better guanxi, and guanxi is crucial for social commerce. Thus, using WeChat for selling products may damage sellers' guanxi and negatively influence social commerce.

If other social media technologies intend to adopt social commerce, what should they do? They should first learn that the most important reason for social commerce to flourish on WeChat is not because WeChat is a social platform — it is because WeChat is the social platform that the Chinese choose by default and cannot live without (Y. Chen et al., 2018). This means that Chinese people spend most of their time on WeChat rather than on any other social platforms; and their online identities and networks are housed in the ecology of WeChat. WeChat being the most popular social platform also means more guanxi are accessible on WeChat than on other social applications, and guanxi is the foundation for social commerce. Because WeChat has a large enough guanxi pool for its users, social commerce can thus flourish. Therefore, in theory, a social application can make social commerce happen as long as it has functions to support direct communication, business promotion, and money transaction. But in reality, the social application must be embedded in the lives of its users to a degree that they will have social relationships that can be leveraged as resource for social commerce.

Scholars found that when using social networks, people want to engage in social activities more than commercial activities (Ko, 2017). Our findings support this and suggest that the ability to maintain a balance in relationships and commerce efforts is often compromised with social commerce. While social technologies can support social commerce by attracting more users and providing necessary functions, should they really support social

commerce, which will damage their social values? If social technologies want to support social commerce, they should prioritize and balance the needs between those who want to participate in social commerce and those who only want to socialize. Essentially, there should be a transparency between social activities and commercial activities, supported by functions that allow for flexible user engagement with social commerce. While we understand that social platforms will continue to seek ways to monetize their services, we believe that social technologies should support social interactions first, to maintain their unique offering, rather than becoming online shopping malls.

7.4.1 Understanding User's Interaction with WeChat

Similar with the previous study (Chapter 6) on young people's social commerce practices on WeChat, this study is also an example of user's appropriation of WeChat. Participants used various communication and social functions to buy and sell goods on WeChat (with the help of money transaction features such as money transfer and Red Packets), even though these functions are not meant to be used for commercial activities. Appropriation of WeChat goes deeper than using WeChat as it is intended to be used because the user understands the functions better and thus can appropriate them for his or her own purpose. Yet, appropriation also brings outcomes that the user may not expect. For example, as findings showed, while sellers took advantage of the large number of social connections on WeChat for establishing and expanding their businesses, their use of WeChat's social network Moments for advertising also hurt their valuable guanxi. This study presents both the advantages and the potential risks of appropriating a technology, using social commerce on WeChat as an example.

7.5 Impact on WeChat's Social Commerce due to New Taxation Law

When interviewing participants for this study, one question I asked participants was whether they reported tax for their income earned on WeChat. There was no exception — all of them

responded no. Some participants thought reporting tax was unnecessary, since they were not earning a huge amount of money, but "only a few thousand yuan" (less than $1,500). Participants who earned more said nobody reported tax, and the government did not care either. However, during the study, we also heard from several participants that the Chinese government was in the process of formulating a new law to tax money earned from online platforms such as WeChat and Taobao. The media soon reported this news too. From talking with participants, I learned that one of the biggest attractions of selling on WeChat was the absence of taxation. I wondered what it would mean if this advantage disappears.

7.5.1 Background: A Grey Market on WeChat and a New Taxation Law

A grey market refers to "the trade of a commodity through distribution channels that are not authorized by the original manufacturer or trade mark proprietor" ("Grey market", 2020), and a black market is "the import of legally restricted or prohibited items …as is the smuggling of goods into a target country to avoid import duties" ("Grey market", 2020). Traditionally, a grey market is formed around goods that have huge price differences in two countries: people buy goods from a country and resell these goods in another country to earn the price difference. According to the definitions of grey and black markets, most of the social commerce businesses on WeChat should be classified into forms of black market. For example, daigous carried goods from outside China and resold them in China without paying import tax. However, the line between a grey market and a black market can be blurred when coming to China. While social commerce businesses on WeChat are mostly forms of black market, they are culturally accepted by Chinese people. As findings from above shown, participants engaged in social commerce on WeChat without worrying too much that what they were doing was essentially illegal, and they were not pressured by the government or any law to perform legally either. Therefore, in the rest of this chapter, I categorize social commerce businesses on WeChat as part of a grey market instead of a black market, where the term "grey" highlights this subtly that selling on WeChat is neither

entirely right (white) nor entirely wrong (black), but more a state in between.

According to past literature, there are a few significant differences between offline and online grey markets (Zhao et al., 2016). First, barrier to entry of online grey markets is lower than their offline counterparts. Second, online tools make it possible for individuals to conduct grey marketing resale, when offline it is solely operable for wholesalers or smaller scale retailers. Third, the customers of online and offline grey markets are also different. Online grey marketers utilize consumer-to-consumer (C2C) websites such as Taobao or Ebay to directly resell products to end customers, instead of reselling to other retailers as traditional offline grey marketers do.

Many studies on retail and global market have researched grey markets (Berman & Dong, 2015; Bucklin, 1993; Zhao et al., 2016). While most of them focus on traditional, offline international grey markets, in recent years, a few of them started looking at online grey markets as well (Berman & Dong, 2015; Zhao et al., 2016). In HCI, grey market has not been closely studied yet. But a related economic form — informal market — has been investigated recently, mostly by researchers studying information and communications technologies for development (Chandra, 2017; Chandra et al., 2017; Pal et al., 2018). In informal market, people make profits by reselling goods that are unaware of the original trademark holder. Thus, grey market is a type of information market. While many factors influence a grey market, one of the most prominent one is the policy used to regular the market, such as taxation. While scholars in economics have learned much about the relationship between public policy and grey market (Bucklin, 1993; Cross et al., 1990), it is still unclear, from an HCI perspective, that how technology plays a role in grey market with some policies enacted.

According to earlier discussions in this chapter, social commerce on WeChat oftentimes represents a grey market, especially when focusing on the businesses of daigous. And when conducting the study in this chapter, I realized quickly that not everything about social commerce on WeChat was always "right." For instance, consider a daigou who purchases

goods from foreign countries and carries them back to China to resell them as commodities — she is able to succeed in this entire process if only she deceives the customs officials that the goods are for her own use but not resale. Otherwise, she will be taxed by the customs and not earn much money. But since there is no taxation and other related policies enacted on WeChat, daigous could take advantage of WeChat and develop their informal businesses. Essentially, none of the daigous I interviewed paid any tax for their businesses.

However, in 2018, the Chinese government released a plan for rolling out a law: The Electronic Commerce Law in People's Republic of China (中华人民共和国电子商务法) (Www.npc.gov.cn, 2018). And on January 1, 2019, the law became effective. It details regulations and rules for running businesses and making purchases online, regarding both business owners and consumers. It also includes specific requirements for taxation, stating that "e-commerce operators should fulfill their tax obligations in accordance with the law" ("电子商务经营者应当依法履行纳税义务") (Www.npc.gov.cn, 2018). Having seen participants sharing news and expressing their concerns about this law, I wanted to explore how this new taxation law could impact buyers and sellers on WeChat and social commerce on WeChat more generally. With a particular attention to technology, I also hoped to delineate the relationship among WeChat, this new taxation law, and people's grey marketing practices. I asked the following research questions:

- Will this new taxation law impact WeChat's grey market, including its buyers and sellers? If so, what are those impacts?
- How will this law influence or even change WeChat? (*i.e.,* how will WeChat respond to this law?)

7.5.2 An Unexpected Finding: The Grey Market on WeChat Was Not Impacted

To answer these questions, I planned to first observe participants who were sellers from this study and the previous study (*i.e.,* the study in Chapter 6 on young people's social commerce practices) and then schedule interviews with them to discuss their changes of selling

behavior and reasons of these changes. I chose to start from these participants because I had added all their WeChat and understood their selling practices before the new law enacted. If no data saturation was reached after interviewing these participants, I would recruit more WeChat sellers and study their selling practices before and after the law became effective. The implicit assumption I made was that sellers' businesses and their ways of using WeChat for selling were *bound to change* due to the new taxation law.

I began to observe sellers on my WeChat since mid 2019, half a year after the taxation law became effective. I checked sellers' Moments posts several times in a day, noting down the frequency of them posting advertisements on Moments, the products they advertised, if there was any change in their behaviors of advertising, and if so, what the changes were. But not long after I started observing, I found that there was no evident change in any of the sellers' behaviors — they kept posting many advertisements on Moments as they used to post, and this was true for both sellers who were and were not daigous. Furthermore, P12 from Chapter 6, who was a senior in high school when I interviewed her but had graduated and was ready for college at the time of my observation, had even restarted selling contact lenses and pets on WeChat. (She stopped selling on WeChat from late 2018 to early 2019 because she needed to prepare for the college entrance examination.)

These findings were unexpected. To find out if sellers' businesses was truly unaffected by the law, I talked with a few of them on WeChat via text messaging. They told me they did not feel they were forced by the law to change. For daigous, the risk of being caught by the custom and being found out evading tax existed, but this risk already existed before the law enacted. While I anticipated participants' selling practices to change because of the law, findings above revealed this assumption was unreliable. Sellers thought the government would enforce this new law, but since there was no visible enforcement of the law, selling on WeChat remained as before.

Having been focused on people's use of WeChat in China for the past few studies, I learned that WeChat is not solely an instant messenger but a fully integrated part of Chinese

people's everyday life. The popularity of WeChat was partly due to the Chinese culture and the support of physical infrastructure in China, which both could be absent elsewhere. For instance, people can pay with WeChat in restaurants in China because these restaurants accept WeChat Pay. But outside China, restaurants may not accept WeChat as a payment method. Witnessing WeChat being pervasive in China and deeply embedded in Chinese people's life, I began to wonder if WeChat will still be this powerful outside of China and what it means for people to use WeChat in places other than China.

CHAPTER 8

WECHAT REPRESENTS CHINA IN THE UNITED STATES

For my last study on WeChat, I turned to WeChat users outside China. I asked, if WeChat is becoming pervasive and omnipotent in China, how would the use of WeChat change when Chinese people moved outside China? The answer to this question will show how people will use WeChat in an environment that lacks the support it has in China, and thus in turn helps us understand how the cultural, physical, and even political infrastructures of China play a part in the ubiquity of WeChat. In relation to these larger interests, I explored how people use WeChat outside China and the reasons behind their uses.

8.1 Background

How people act in a society and how they decide what to do are influenced by many factors, such as other people's behaviors, the social and political environment they are in, the traditions in their communities, etc. American sociologist Ann Swidler believed culture plays a central role in influencing human action. She defined culture as "symbolic vehicles of meaning, including beliefs, ritual practices, art forms, and ceremonies, as well as informal cultural practices such as language, gossip, stories, and rituals of daily life" (Swidler, 1986). She argued that culture influences people's actions "by shaping a repertoire or 'tool kit' of habits, skills, and styles from which people construct 'strategies of action' (Swidler, 1986)."

If culture is a tool kit that people turn to for how to act in life, then this is true for both the offline world and the online world. However, in an online environment, besides the culture of the offline world in which the online environment resides, the online environment also has its own culture (Allison, 2018). Thus, different online environments have different cultures. The offline culture surrounded an online platform and the culture formed on the

platform together influence what online platform people use and how people act on it.

The idea that different online environments have different cultures corresponds to Marshall McLuhan's argument "the medium is the message" (McLuhan, 1964). McLuhan believed that while a medium carries information as its contents, the medium itself also conveys meanings. He believed that the meanings embedded in the medium are more important than the contents carried by the medium. McLuhan defined medium broadly. For example, electric light, written words, print, telegraph are all media according to him (McLuhan, 1964). Certainly, whether something is a medium or the content of a medium depends on one's perspective. As McLuhan stated, "the 'content' of any medium is always another medium" (McLuhan, 1964).

When understanding "the medium is the message," I regard an online platform as a medium from three aspects. Take WeChat as an example. First, WeChat, as a mobile application, runs on binary digits and electricity, which then realize the diverse functionalities on WeChat. The digits and the functionalities are *the technical aspect* of a medium. Second, the contents present on WeChat are in forms of text, audio, images, etc.: they are *the format aspect* of the medium. Third, there is *a cultural aspect* of the medium as well — the Chinese use WeChat as a default communication and social medium, while few other ethnic groups use WeChat as intensively as the Chinese. In Chapter 4, when studying the long-distance communication between Chinese parents and children, I focused on the format aspect of WeChat (*i.e.,* the communication media on WeChat). In this chapter, I extend my focus to all three aspects of WeChat as a medium. Specifically, I particularly attend to the cultural aspect of WeChat, as I am interested in learning why people use WeChat outside China, where WeChat has less cultural and infrastructural support.

WeChat was launched in China in 2011 and rebranded for international markets in 2012 (WeChat, 2011). While WeChat can be accessed in more than 100 countries, it is not popular in most of these countries because WhatsApp and Facebook Messenger are the dominant instant messenger and social media in these markets (Bucher, 2020). For the 1.16

billion monthly active users WeChat has accumulated so far (Statista, 2020), most of them are Chinese people who live in China. However, data also shows that WeChat is popular among Chinese people no matter where they are, as "100 million Chinese citizens use the app outside of the country's borders" (Bucher, 2020). For instance, WeChat is one of the top messengers used in the Asia-Pacific Region, which includes many popular travel destinations of the Chinese (Bucher, 2020). Taking these different factors into consideration, I chose to study how WeChat is used in the United States, where there are many Chinese tourists, students, and immigrants. In addition, from the standpoint of personal experience, I am confident that I have a good understanding of the cultural and social contexts in the US since I have lived in the US for seven years. This understanding will support me in interpreting user behavior and motivation of using WeChat in the US. To explore WeChat's use in the US, I ask the following research questions: (1) how and why do Chinese people use WeChat in the United States? (I define Chinese people as both Chinese nationals and immigrants.) (2) Are there any differences in terms of how Chinese people use WeChat in the US versus in China? Answers to these questions will provide insights for understanding whether WeChat is a necessity in the US like it is in China.

8.2 Data Collection and Analysis

To answer these questions, I conducted a qualitative study in two regions in the US: the San Francisco Bay Area (the Bay Area) in California and the Atlanta Metropolitan Area (Atlanta) in Georgia. I selected these regions because many Chinese immigrants and nationals lived in these regions (Echeverria-Estrada & Batalova, 2020). In addition to this, there were some differences between these two areas that were related to my research interest: the Bay Area is a place where most of Chinese immigrants and nationals live in the US; it has one of the densest Chinese population groups in the US (Echeverria-Estrada & Batalova, 2020). Due to this density and also because California has been a major migration destination of the Chinese since more than a hundred years ago ("History of Chinese Americans in San

Francisco", 2020), Chinese immigrants have brought many Chinese traditions with them, settled these traditions down, and developed them further in California. In the Bay Area, it is common to see Chinese restaurants and supermarkets. In places where there is an even denser Chinese population, such as the Chinatown in San Francisco, one can often hear restaurants waiters converse with customers in Mandarin Chinese or Cantonese[1] instead of English. Because there are many Chinese people living here, the Bay Area has developed a better infrastructural support for the Chinese as well. For instance, WeChat Pay and Alipay are often accepted as payment methods in restaurants or snack shops (see Figure 8.1 for an example I captured), because business owners know their customers from China may want to use these tools to pay. Compared with the Bay Area, Atlanta does not have as many as Chinese immigrants or nationals, thus there is less infrastructural support for them. Hence, although both are in the US, the Bay Area has both a greater density of Chinese and infrastructure to support WeChat than Atlanta. Researching how Chinese immigrants and nationals use WeChat in both regions will provide a holistic view of how WeChat is used in different places outside China.

Recruitment of participants began in the Bay Area in November 2019. To recruit, I posted advertisements in my WeChat groups, on my Moments, and on a Chinese online social network named *Douban* (豆瓣), a popular platform used by many young Chinese who live in the US. In these advertisements, I looked for WeChat users who was originally from China but later moved to the US. Ideally, they should have used WeChat in China before they moved to the US, since I was interested in the possible changes that took place in their uses of WeChat after they left China. I also asked my friends on Moments and people I connected with on Douban to share these advertisements in their social networks, hoping to recruit more participants. In early 2020, I repeated this recruitment process in Atlanta until reaching data saturation (Charmaz, 2006b). The entire recruitment process resulted in 20 participants: 11 in the Bay Area and nine in Atlanta. Table 8.1 provides

[1]Cantonese is one of the many dialects in China. It is mostly spoken in southern China and is one of the official languages of Hong Kong.

Figure 8.1: On a Table in a Tea Shop in Cupertino, an Advertisement Says “Open WeChat or Alipay to Scan, Order, and Pay for the Food.”

Table 8.1: Study 5 Participant Demographics.

Name[α]	Gender	Age	Location[β]	Occupation	Years of Living in the US	Years of WeChat Use
Yun Zhou	M	30	BA	Graduate student	7	7
Chilun Zhang	M	18	BA	Undergrad student	0.25	5
Lu Yang	F	33	BA	Researcher	10	7
Ling Huang	F	28	BA	Data analyst	2.5	8
Gan Jin	F	26	BA	Data analyst	8	8
Xiaojun Lin	F	22	BA	Engineer	5	8
Jiaxin Liu	F	28	BA	Designer	6	6
Xia Chen	F	28	BA	Engineer	5	8
Hui Tian	F	24	BA	Graduate student	2	6
Ren Yu	F	25	BA	Engineer	6	7
Min Jiang	Non-binary	28	BA	Teacher	4.5	5
Qianyu Wang	M	23	ATL	Graduate student	1.5	8
Liumeng Wu	F	24	ATL	Graduate student	1.5	6
Sheng Zhu	M	29	ATL	Graduate student	1.5	6
Si Lei	F	24	ATL	Graduate student	1.5	6
Ying Li	F	22	ATL	Graduate student	1.5	4.5
Xiaolin Sun	M	24	ATL	Graduate student	1.5	9
Anran Lu	M	26	ATL	Graduate student	2.5	9
Yue Xu	M	24	ATL	Graduate student	1.5	8.5
Fei Wang	F	23	ATL	Graduate student	1.5	4.5

[α] All the names are pseudonyms. [β] BA is the Bay Area and ATL is Atlanta.

participant information in detail.

Each participant first completed a four-day diary and then a face-to-face follow-up interview. The diary asked participants to report how they used WeChat in their daily lives with five short questions, including both multiple choice questions and open-ended questions (see Appendix). Designed to be easy to answer in a short period of time, the diary took no longer than five minutes to finish. The first four questions were mandatory, asking participants the time they used WeChat, the device they used WeChat on, functions they used on WeChat, and purpose of using WeChat. The last question asked participants to upload a screenshot of their WeChat to show examples of what they did on WeChat. I made the last question optional for participants who might have privacy concerns. Answers to the

questions and the final screenshot were used in conjunction with the interview, to encourage participants to reflect on their everyday use of WeChat and to provide addition data of their uses as well.

Participants were instructed to select two weekdays and two weekend days of one week to complete the diary. This criterion meant to be a low burden activity to capture how participants used WeChat in their daily lives, acknowledging that participants' schedules likely differed between weekdays and weekends. In the morning of these four days, participant received a link that directed them to a secure web page to complete their diary. They could complete the diary at the end of a day, reporting multiple cases of using WeChat throughout the day as one single diary; or, they could complete the diary multiple times in a day by using the same link, recording their uses as soon as completed. Among all 20 participants, seven completed their diaries once per day and 13 completed multiple times per day.

After participants finished their diaries, I scheduled an hour-long follow-up interview with each of them to further understand their ways of using WeChat and the reasons and motivations behind, with their diaries acting as a discussion guide. Focusing on their uses of WeChat, I asked participants questions such as "How do you achieve this goal through WeChat?" "Why do you use WeChat for this purpose?" and "Do you use WeChat this way when you were in China, and why?" Interviews were conducted at coffee shops or participants' homes based on participants' preferences. Interviews were also audio-recorded with participants' permission. To compensation for their time, each participant was given a $25 Amazon gift card.

After data collection, I transcribed all the interview recordings and used the Chinese transcripts to conduct data analysis. Since I knew the topics I wanted to focus on, I chose to conduct a thematic analysis for the data (Miles & Huberman, 1994). Themes I focused on included the functions participants used on WeChat, participants' purposes of using these functions, distinct uses that I did not observe in China, and participants' motivations of continuously using WeChat in the US. Unexpected, emergent themes that were relevant to

my concerns were also noted for coding. I went through the interview transcripts one-by-one and coded them with short phrases (*i.e.,* codes), looking for participants' responses that highlighted these themes. In the end, I grouped the codes into higher-level categories: uses of WeChat that are distinctive to the US, reasons for staying on WeChat, reasons for leaving WeChat, and other uses. For participants' quotes in the next section, I translated them from Chinese to English verbatim.

8.3 Findings

Before conducting this study, I expected participants to use WeChat less often than they were in China since there were many other social networks and instant messengers available in the US. However, the findings shown that most participants still used WeChat quite frequently, in similar ways that people in China use WeChat. This section presents findings on when participants would turn away from or keep using WeChat, their reasons behind these decisions, and why for most participants, it was more important to stay on WeChat than to permanently leave WeChat.

8.3.1 Situations and Reasons of Turning Away from WeChat

Most participants used WeChat as their major communication tool, but there were also a few situations when participants had to turn away from WeChat. They made this decision by drawing from their culture repertoires and weighing the technical and design constraints of WeChat.

Leave WeChat When Making Payments

Xia Chen was a young woman working in a tech company. She used WeChat frequently and enjoyed shopping. In the US, credit card and Apply Pay were Xia's default payment methods, so she never carried cash with her, which was "just like when I was in China," she said. She added a few Chinese WeChat sellers who lived in the US to her WeChat, and

she had bought several pairs of earrings from them. Yet, she did not pay them via WeChat. She explained her reasons as below:

> I use WeChat to communicate with these sellers from the beginning of our conversations till the end, but I never use WeChat to pay. This is because WeChat only supports transactions in Chinese yuan, and here in the US, we all think "what's the point of receiving Chinese yuan?" So I would rather use other applications such as Venmo, which supports payment with dollars. There is no need to use WeChat to pay: what are you going to do with all the yuans you receive? You can't even withdraw them as cash. If WeChat supports US dollar, I think people will use WeChat [to pay] because WeChat is more convenient.

The exemplar above describes a situation where participants had to leave WeChat: when making payments. In China, participants used either WeChat or Alipay for payment because these applications were widely acceptable. However, in the US, participants drew from the culture tool kit they developed locally and learned that credit cards and payment applications such as Venmo were more acceptable than WeChat. I provide more examples below.

When being asked what was the number one payment method he used in the US, Yue Xu answered, "I use American credit cards to pay. I use them because they can accumulate credits and they have cash back." Yun Zhou echoed by saying "Most of the stores [in the US] do not accept Alipay or WeChat. Also, I use credit cards because I get used to pay with them." Yun Zhou and seven other participants also used Venmo or Zelle to split restaurant checks when eating with other people. They had to split check because the restaurant only accepted one or two credit cards per table. While they could use WeChat for splitting payments, the currency accepted in the US is US dollar, so it made sense to use American applications that supported transactions with dollar instead of WeChat. Besides splitting payment, Jiaxin Liu and five other participants used Venmo or cash to pay and receive money face-to-face as well, in situations where they bought or sold second-hand goods from other people.

Since there were places (*e.g.,* Chinese restaurants) where paying with WeChat was welcomed in the Bay Area and Atlanta, I asked participants if they had used WeChat to pay in those places. All participants in the Bay Area and most in Atlanta knew there were places around that accepted WeChat for payment. But even though these places existed, and participants could pay with WeChat when they visited there, they seldom did so. Few exceptions included Xiaojun Lin (who once used WeChat to pay at 99 Ranch, a Chinese supermarket), Xiaolin Sun and Yue Xu (who paid with WeChat once in a Chinese restaurant), and Gan Jin and Liumeng Wu (who paid with WeChat on Chinese shopping websites in the US). These participants used WeChat to pay because they had some money left in their WeChat accounts, they could get some benefits such as discount, and there was no other way to spend the money. As Xiaojun Lin explained,

> I used WeChat to pay in 99 Ranch once because I saw it says it accepts WeChat Pay. I had some money left in WeChat since I just got back from China. I paid with the money in WeChat because the money was already there, and I had no other ways to use it. But most of the time, I don't have money in WeChat. That was the only case I used WeChat to pay in the US.

Compared with elsewhere in the US, Chinese restaurants, Chinese supermarkets, and Chinese shopping websites are places where cultural tool kit reflects Chinese norms more than American norms. Thus, it is not surprising that WeChat and Chinese yuan are accepted in these places, since Chinese people are familiar with them as part of Chinese cultural tool kit. However, because these places are still situated in the larger environment of the US, motivating people to pay with WeChat, which is not part of the cultural tool kit in the US, requires extra conditions (*e.g.,* there is money in WeChat account) and incentives (*e.g.,* discounts when paying with WeChat).

Leave WeChat When Discussing Sensitive Topics

Liumeng Wu was a Master student living in Atlanta. Unlike many of her peers, she cared a lot about what was happening in China, and she sought information and news about China constantly. Although she read articles posted by different WeChat official accounts, she thought they were full of biases and did not agree with many of their opinions. She knew that information circulating on WeChat was censored, and she was concerned with censorship on WeChat. It made her feel she had to be very careful with what she says on WeChat. She said,

> I feel I'm being monitored by WeChat. I can't say whatever I what to say. I also feel it is easy to get my WeChat account suspended if I share sensitive information on WeChat. I guess the contents on WeChat are under the control of the government. But I won't stop using WeChat just because of this, plus I don't discuss sensitive topics with everybody. I will certainly censor myself before I say anything, so I won't say stuff that's considered sensitive on WeChat. If I want to discuss sensitive information, for example, with my partner, we will talk about them face-to-face.

The exemplar above shows that surveillance and censorship on WeChat can push participants away from WeChat, although temporarily. It also means that there were things that participants wanted to discuss, but they avoided discussing on WeChat. Indeed, in this study, all the participants knew their conversations on WeChat were surveilled. Xiaolin Sun told me he knew that the Chinese government could easily monitor users on WeChat, and Chilun Zhang compared WeChat with Facebook, describing Facebook as "open" while WeChat as "something with strict censorship." Strategies utilized by Liumeng Wu above to avoid being censored on WeChat, such as self-censorship and leaving WeChat for other communication channels, were used by other participants as well. For example, Ren Yu said when talking about sensitive topics, she would chat on iMessage instead of WeChat:

"Since WeChat is from China, I don't feel comfortable talking about politics and other serious topics on WeChat." Since WeChat as a Chinese application is associated with censorship, when participants faced the risk of being censored, they had to weigh carefully if they wanted to use WeChat for communication. The message that "WeChat censors" was part of participants' knowledge in their Chinese cultural tool kit.

Although participants knew that conversations on WeChat are surveilled and censored (as a common knowledge), none planned to stop using WeChat permanently. In fact, except for the participants mentioned above, few participants brought up censorship as a cause for limiting their uses of WeChat during our interviews. Most participants did not see surveillance and censorship as obstacles or threats, and none of them planned to leave WeChat permanently because of Chinese government's surveillance on the platform. Fei Wang was in the majority participants who cared little about being surveilled and censored. She explained her motivation:

> My conversations with my friends are not affected by censorship, and since WeChat is convenient, I choose WeChat. I don't really talk about anything sensitive, and I'm not the kind of person who sends a lot of messages. So, I don't think there is a necessity to stop using WeChat and switch to something else.

From the perspective of the medium is the message, an important message carried by WeChat as a communication medium is surveillance and censorship: if you use WeChat, everything you send on WeChat will be monitored and what you read will be censored. Participants understood this well and distinguished this property of WeChat from other media.

Leave WeChat to Contact People Who Are Not on WeChat

Xiaolin Sun was a graduate student living in Atlanta. He used WeChat frequently to chat with his partner, parents, and friends, who were mostly in China. However, he had to use

WhatsApp to contact a good friend, whom he got to know when they were both in China. His friend stopped using WeChat and switched to WhatsApp because he was concerned about WeChat's surveillance and censorship. Hence, when Xiaolin wanted to contact this friend, he had to use WhatsApp. This was currently not an issue since both he and his friend were in the US; however, this situation might change if either of them goes back to China as WhatsApp, similar to many other foreign online services, is blocked in China.

This exemplar shows that participants had to leave WeChat to contact people who do not use WeChat. These people included participants' Chinese friends who had concerns with WeChat and participants' American peers and colleagues who did not use WeChat. Besides Xiaolin Sun, several participants had also been in similar situations: Xiaojun Lin, Jiaxin Liu, and Ren Yu were all young women who worked in technology companies, and they all used Slack to contact their colleagues because Slack was the designated communication tool of their companies. Qianyu Wang, Liumeng Wu, Sheng Zhu, and Si Lei, who were graduate students, used Slack to contact the non-Chinese peers in their programs. When being asked what tool she used for group project communication, Liumeng said, "If everybody in the group is Chinese, we will create a new chat on WeChat. If there are three Chinese people and one foreigner, we will create a chat on Facebook Messenger. If everybody is in the same Slack channel, then we will create a chat on Slack. It depends." Qianyu Wang agreed: "You can't expect Americans to use WeChat with us."

Besides working and studying, participants had to leave WeChat if people they cared about were not on WeChat. Ying Li still used QQ because some of her friends only used QQ but not WeChat, and Gan Jin used Telegram out of the same reason. Xia Chen's boyfriend is a Canadian-Chinese, so Xia used Facebook Messenger to contact her boyfriend: "Because my boyfriend is Canadian and his friends are all foreigners, we usually chat on Facebook Messenger instead of WeChat. There are two or three friends of his who use WeChat, but he doesn't use it."

Participants' experiences above are straightforward, but they show how WeChat is seen

as a Chinese application that is expected to be used only by the Chinese, even though WeChat is available in many languages and regions. This is another message carried by WeChat as a medium: only the Chinese, but not other people, use WeChat.

Leave WeChat to Learn American Culture

Yue Xu was a first year Master student who had just moved to the US six months ago. Before, Yue had never been to the US. Moving to a new country, Yue was interested in learning about American culture and things happening around him. Thus, he registered Twitter and Reddit, regularly checking the trending posts on both social media. Since he was very interested in knowing American people's opinions of China, Yue also followed the China subreddit on Reddit. "I've come to a new place, so I need to understand this place," he said.

The exemplar above shows that participants left WeChat and used other online social media when they wanted to understand and learn about American culture and news. Participants chose American social websites or news outlets to gain knowledge about the US, even though there were plenty official accounts on WeChat that provided information about America. For instance, Ren Yu and Qianyu Wang read technology news on LinkedIn, which provided news about technology development in the US. Likewise, when checking updates about local news, Sheng Zhu visited CNN's official website rather than reading news in WeChat official accounts. He said, "I don't think stuff posted by WeChat official accounts counts as 'news,' so I won't treat them too seriously. I think news needs to be formal and serious, meaning that it has to be responsible for what it is saying. If I want to read news, I will turn to news applications." Similar to Yue Xu, Qianyu Wang and Xiaolin Sun used Reddit to know more about America. Xiaolin said, "I saw a lot of American students use Reddit. They often check out Reddit when waiting for the class to begin. If I search for the subreddit of my school, there is a lot of information about stuff happening around me, in my community. Reddit has stuff that's closer to me."

These examples lead to the same conclusion as the previous section. Since WeChat is a Chinese application, participants thought information that is not related to China should be sought from elsewhere, even though such information is available on WeChat. If one wants to know about the US, one turns to American media.

8.3.2 Situations and Reasons of Staying on WeChat

Compared with the situations that pushed participants away from WeChat, there were arguably more important situations and reasons that made participants stayed on WeChat. These reasons are related to WeChat's technical features, people on WeChat, and WeChat as a Chinese social application.

Stay on WeChat Because It Has Powerful Functions

Chilun Zhang was a freshman in college. He started using WeChat since middle school, so he was quite familiar with WeChat and used it very often. He had multiple different groups on WeChat, in which he discussed schoolwork, interests, and future career opportunities, although many group members were strangers he had not met in real life. He also owned an official account in which he posted information and thoughts related to his major. He said, he could use WeChat to contact important people or resources he needed, and this was the main motivation for using WeChat. Knowing WeChat well, he also took advantage of diverse functions on WeChat and thought they were powerful. For instance, if he saw something on WeChat that he wanted to read later, he would forward the information to the built-in "file transfer" account on WeChat. This way he could save it for later read and access it on WeChat's computer application (he had WeChat logged in on both his phone and computer.) In addition, he even used WeChat as a search engine:

> If I see a term mentioned in a group chat and I don't know what it means, say "neoliberalism," of course I could search on Google or even Oxford Handbook and read several pages of their explanations and get what neoliberalism means.

> But during the fast-paced conversation happening in a group where there are five or six new messages showing in a second, it is more direct to search for the term on WeChat. You type the term in the search bar of WeChat, and you will get some simple, maybe not that accurate definitions of the term. For me, intuitively, searching on WeChat is more convenient than opening another application.

The exemplar above shows that participants valued some functions provided by WeChat. They stayed on WeChat so that they could keep using these functions as needed. A few functions that were commonly praised by participants include its search function, its mini programs, and its built-in file transfer account, which can be used to transfer information between the user's WeChat mobile application and computer application. More examples are provided as follows.

Similar to Chilun Zhang, Liumeng Wu used the file transfer function on WeChat as a notepad and a reminder. Having her WeChat account opened on both her computer and her phone, she sent information she saw on computer to the file transfer account in her computer WeChat, so that she could open the same file transfer account in her phone WeChat and receive the information she sent via computer. Yun Zhou, Xiaojun Lin, and Ren Yu also used the file transfer function this way. Xiaojun said she preferred WeChat's file transfer to AirDrop, because "For AirDrop, I need to open the Finder on my computer first, then find my phone, and then drop the file I want to transfer, plus I need to have both my computer and my phone open at the same time. If my phone is dead with no battery, I can't use AirDrop. But with WeChat, I don't have to worry about this; I can transfer and receive stuff asynchronously."

Gan Jin and Ying Li were happy that they could access third-party services from numerous mini programs on WeChat. For example, Ying played a game with her friends on a WeChat mini program called Script Kill (*Juben Sha*, 剧本杀). Gan and Ying thought mini programs on WeChat were convenient, saving them time from downloading other applica-

tions or registering new accounts. Si Lei compared the searching functions on WeChat and Facebook Messenger and thought WeChat's was better: "It is pretty easy to search for a chat record on WeChat. For example, if I want to search for an image in a group chat, I can open the group chat, tap 'search,' and then tap 'media.' WeChat categorizes chat records well."

These functions on WeChat could meet participants' needs, leaving participants an impression that WeChat was simple, convenient, and valuable to use. These characteristics of WeChat were also a message carried by WeChat, attracting participants to stay on WeChat and use it.

Stay on WeChat Because It Represents Home

Si Lei was a first year Master student who had never been to the US before. She used WeChat very often and had pinned two conversations to the top of her WeChat: one was her family group chat, the other was a one-on-one chat with her boyfriend. Although living in the US, she did not care much about what was going on in the US, so she rarely read American news. She said she did not care about politics at all, because "it is not something I can control." If she needed to contact her American peers, she would use Slack instead of Facebook Messenger. This was because she did not want to participant in her American peers' social circles and Facebook Messenger made her feel too close to them, while Slack was more official and distant. She explained: "Americans like to party, which I don't really understand. I only want to make several friends." Undergoing a culture shock, Si felt WeChat was more familiar to her as a Chinese. She said, "I think WeChat is a relaxed and safe environment. I usually don't do formal work when I'm on WeChat, mostly just randomly chatting or looking through stuff on Moments.

The exemplar above shows the most critical reason of why participants stayed on WeChat even though they were not in China but the US: participants saw themselves as Chinese, and thus they felt more comfortable speaking Chinese and hanging out in an environment

that resembles Chinese culture and features to them — in an online space, this environment is WeChat. For instance, besides Si Lei, Sheng Zhu said even though he could send messages in Chinese to his Chinese friends on American social platforms, he preferred to use WeChat because "WeChat provides a Chinese context, which is familiar to us Chinese people." Related to this, Qianyu Wang also said, "If I meet a Chinese person and I do not add their WeChat, it feels like I have not truly or officially met them."

This finding was true for most participants, although not everyone articulated well why they felt more comfortable on WeChat. Usually, they would say "it is more familiar to using WeChat" (*e.g.,* Xiaojun Lin) and they connected with Chinese people on WeChat "out of habit" (*e.g.,* Jiaxin Liu). However, there were exceptions.

Ling Huang was a young woman who used WeChat the least often among all participants. She said, "WeChat isn't my default communication tool nor the social application I use the most." Having studied and worked in Hong Kong for a decade since undergraduate, she was different from other participants in that she was more willing to bond with people from different countries. For example, she used WhatsApp to contact her Indian friends and Facebook Messenger to contact her Taiwanese friends. She also used Facebook to search for local events to participate in, which was not seen on any other participants. She was happy with having friends from diverse cultural backgrounds and did not mind using many social applications due to this reason. Ling said the only reason that kept her using WeChat was because her parents, who were in China, used WeChat.

Ling Huang was an outlier in this study. She saw herself less as a typical Chinese but more as a global citizen. Her usage and reflection of WeChat showed from a different perspective how WeChat is seen as a Chinese, but not an international, application. However, Ling still used WeChat because of her parents, which revealed another vital reason that participants continued to use WeChat: participants stayed on WeChat to keep in touch with people they cared about, who often were friends and families in China. This finding echos both findings from the study on long-distance parent and children communication

in Chapter 4 and findings outlined earlier in this chapter, where participants temporarily left WeChat to contact their American peers and friends. Because most of the participants' social connections, including their closest relationships, were exclusively or predominantly on WeChat, participants were often compelled to WeChat.

Because there were many Chinese friends and families on WeChat, and because WeChat as a Chinese application was familiar to participants as Chinese people, participants (except Ling Huang) used WeChat as their number one mobile social platform. In this sense, even though being an online tool, WeChat offers a sense of home to participants, who were far away from China.

Stay on WeChat Because It Is Aesthetically Familiar

Mentioned in section 8.3.1, Xia Chen was a young woman working in a tech company. Since Xia's boyfriend was a Canadian-Chinese who had difficulty reading in Chinese, they usually used Facebook Messenger for communication to accommodate his preference. But sometimes they also chatted on WeChat: "We sometimes use WeChat as well, because there are stickers — those animated expressions — on WeChat." She enjoyed exchanging cute stickers with her boyfriend on WeChat, because she could not find similar stickers on Facebook Messenger. She explained:

> I think stickers on WeChat are closer to what we Chinese people like. WeChat has a sticker gallery where people publish the stickers they created, for example, with their cats. Facebook Messenger doesn't have these cute stickers. Its stickers are silly. Maybe there are some cute stickers on Messenger, but I think its stickers are not as diverse as those on WeChat. Most stickers on Messenger are cartoonish, which don't resonate with my aesthetics, so I don't like them.

The exemplar above shows another specific reason that made participants stay on WeChat: the stickers on WeChat were aesthetically pleasing and familiar to participants. While

this reason seems minute, it shows that details in an application, such as stickers, do matter to users. Besides Xia Chen, Hui Tian, Ren Yu, and Min Jiang also enjoyed sending stickers; they even created customized stickers themselves, taking advantage of the flexibility provided by WeChat. As one of the communication media offered on WeChat, stickers resonate with participants' aesthetics and carry meanings for them. This characteristic of WeChat cannot be substituted by other communication and social applications.

8.4 Discussion and Contribution

To participants, WeChat was different from other communication and social applications because it carried messages that were especially meaningful to participants. Some of these messages pushed participants away from WeChat, while other messages strongly convinced participants to stay on WeChat. As discussed early in the Background, these messages can be classified into three aspects when seeing WeChat as a medium.

8.4.1 The Technical Aspect of WeChat

The first message carried by WeChat as a medium rests in the technical aspect of WeChat. Participants knew that the technical functions on WeChat supported them achieving some goals, but not other goals — and this is one of the messages conveyed by WeChat. For instance, while WeChat allowed people in China to make payments easily, it could not reach the same level of convenience when participants wanted to use it to pay in the US. This technical incompetence was due to both WeChat's development as a mobile technology and the institutional constraint in the US: as a mobile technology, WeChat could have designed and developed better payment functions for users in the US, but it did not; regarding the institutional constraint, using WeChat to pay in the US could be cumbersome because the currency accepted in the US was dollar, which WeChat did not support well. While paying via WeChat was not the best option for participants, WeChat did have other functions that meet participants' needs. Its searching function and its built-in file transfer account

were praised by participants as useful, efficient, and valuable. These characteristics of the technical aspect of WeChat are the first message WeChat conveys to its users: "As a mobile social platform, I provide useful functions that will support your needs well, but you may find it difficult to pay via me in the US."

8.4.2 The Format Aspect of WeChat

The second message WeChat includes relates to the format of the medium. The format aspect is different from the technical aspect in that the former refers to the format of the content provided by the latter. For example, there are many communication functions on WeChat, such as one-on-one private chat, and the format of the chat includes text, emoji, stickers, audio, video, etc. How WeChat allows its users to communicate with these formats is the second message carried by WeChat as a medium. The study in Chapter 4 on Chinese parents and children's long-distance communication shows that these formats (which are media as well) embed meanings both independently and collaboratively, based on how parents and children used them. In the Findings in this chapter, participant Xia Chen used WeChat instead of Facebook Messenger to send cute stickers she liked, because only on WeChat could she find these cute stickers that spoke to her aesthetics as a Chinese. The style of the sticker conveyed a message to Xia that she was welcomed to send the sticker if she used WeChat. Hence, the various styles of stickers on WeChat (as one of the formats of WeChat's chatting function) are transmitted as a message of WeChat.

8.4.3 The Cultural Aspect of WeChat

The third message carried by WeChat is in its cultural aspect, and it is also the most important and evident message WeChat carries for users in the US: WeChat is a Chinese mobile application, and WeChat represents characteristics of China in an online space. As the Findings shows, using WeChat, participants could keep in touch with friends and families in China, and they could text and speak in Chinese without feeling isolated or strange. WeChat

gave participants a sense of familiarity coming from China. For those who saw themselves closer to China, they felt more comfortable and relaxed using WeChat than using other American social applications. For those who wanted to move away from China and learn about American culture, they used WeChat less often than when they were in China and instead explored many other American social platforms such as Reddit, Facebook Messenger, and WhatsApp. WeChat embeds the cultural characteristics of China, including both strengths and weaknesses. This means that censorship, which is pervasive in China, is also presented on WeChat. Hence, participants knew they had to be careful of what they say on WeChat.

It is necessary to clarify that regarding how much the participants cared about the United States, participants fell under a spectrum between not caring about the US at all and caring about the US so much that they no longer care about China. This means while all the participants cared about both China and the US, some cared about the US more and some cared about China more. For those who were more interested in the US, they made friends with Americans and used American social networks; for those who cared about China more, they stayed on WeChat most of the time and kept in touch with Chinese friends and families.

These three messages WeChat carries are not separated from each other. In fact, they often mingle together, affecting users' decision-making process of when and how to use WeChat. For instance, WeChat does not support paying with US dollar well because it is a Chinese social platform that centers on serving people in China (*i.e.,* the cultural aspect), but it is also because WeChat does not provide clear functionalities for users to bind their American bank cards (*i.e.,* the technical aspect). Users understand these messages through using WeChat, flexibly choosing to stay or leave WeChat as needed. Furthermore, they integrated these messages into their own cultural repertoires (Swidler, 1986), as they perform and reinforce these messages through using (or not using) WeChat. In the Information Age, the repertoire of cultural tool kit is not only formed offline in the real world but also online in all kinds of online social networks — with WeChat being one of them.

8.4.4 Understanding User's Interaction with WeChat

The question being asked at the beginning of this chapter, "would WeChat still be a necessity for users who are not in China?" can be answered by findings in this study. Whether WeChat is a necessity for users in the US depends on the user — if they care about China more than the US, if their social circles center more around Chinese people, and if they see themselves more as a Chinese, they will use WeChat more and thus WeChat is more likely to be a necessity in their lives. Whether WeChat is a necessity also depends on how people use WeChat. Similar to studies in previous chapters, participants used functions on WeChat as these functions were intended to be used. For example, they used communication functions to keep in touch with friends and families in China. However, in some cases, participants did not use the functions as they were designed to be used. Instead, they appropriated these functions to fulfill their own needs. One example was participants Chilun Zhang and Liumeng Wu used the built-in file transfer account as a reminder for themselves. While WeChat is not as well-supported in the US as it is in China, participants' appropriation of WeChat reveals that participants still used WeChat frequently and relied on WeChat to fulfill their everyday needs even in the US. In the next chapter, I examine different uses of WeChat and discuss how these uses influence WeChat to move from a platform to an infrastructure.

CHAPTER 9
USER'S ROLE IN PLATFORM INFRASTRUCTURALIZATION

Released in early 2011, WeChat has gained wide popularity in China and becoming an essential part of Chinese people's everyday life in the past nine years. As many participants described in the previous chapters, WeChat is "a necessity" in their lives which "cannot live without." Observing this deepening presence of WeChat, I asked, was WeChat still a mobile platform or had it become something more powerful, for example, an infrastructure?

9.1 Data Analysis

To answer this question, I conducted a new data analysis with data collected from my past studies on WeChat, mainly the studies conducted in China (see Table 9.1) (R. Zhou & DiSalvo, 2020). Starting from learning literature on infrastructure (*e.g.,* (Edwards et al., 2007; Star & Ruhleder, 1996; Star & Strauss, 1999), and see section 3.3 in Chapter 3), I identified many characteristics of infrastructure that WeChat resembles. I then reflected on Plantin and de Seta's work (Plantin & de Seta, 2019) and agreed that WeChat can be defined as infrastructure, but I also saw a gap in their analysis: a lack of focus on user's role in WeChat's infrastructuralization. I thus analyzed all the data collected from my past studies on user's practice of WeChat in China (see Table 9.1), with a focus on user's possible role in WeChat's infrastructuralization.

Guided by the understanding of infrastructure as a relation between the user and the tool (Star & Ruhleder, 1996), I constructed a preliminary codebook with the following categories: the functions participants' used, the purposes of their uses, if their uses conformed to the design intention of the functions, and the reasons of them conforming or challenging the design intention. Then, using Charmaz's coding method (Charmaz, 2006b), I looked for recurrent categories. Building on the preliminary codebook, I iteratively coded the data,

Table 9.1: Four Studies on User's Practice of WeChat in China.

Studies	Year	No. of Participant	Related Chapter
1 - Long-distance communication between parents and children	2016	24	Chapter 4
2 - Communication via emoji and stickers	2016	30	Chapter 5
3 - Young people's social commerce practices	2017	15	Chapter 6
4 - The twin role of WeChat in social commerce	2018	26	Chapter 7

met with my advisor to discuss the data, and then added new relevant categories. When the coding process completed, I grouped categories into three higher-level themes: (1) uses that conform to WeChat's design intention, (2) uses that challenge WeChat's design intention, and (3) other uses. In the end, I placed these categories and themes side by side with definitions of infrastructure (Edwards et al., 2007; Star & Ruhleder, 1996) and platform (*e.g.,* (Bogost & Montfort, 2009; Gillespie, 2010)), looking for user interactions that contribute to WeChat's infrastructuralization as these definitions pointed out (for more details about these definitions, please look at sections 3.2 and 3.3 in Chapter 3). We found that, first, by using WeChat according to its design intention, users adopt it and give it a chance to grow its user base: this matches the deployment and scaling of a system in infrastructure development (Edwards et al., 2007); second, by using WeChat in ways that challenges its design intention, users ground WeChat in their local practices, helping it to embed in their diverse uses: this resembles the localization process of a system when it scales (Edwards et al., 2007); third, in other uses, users change or create upon WeChat to make it fulfill their needs even better: this represents the reprogramming of a platform that makes it an infrastructure (Bogost & Montfort, 2009). Summarizing and abstracting these findings, I identified *a three-level user interaction process of platform infrastructuralization*, the major theoretical

contribution of this dissertation.

9.2 A Three-Level User Interaction Process of Platform Infrastructuralization

Users adopted WeChat as an infrastructure through interacting with it on three levels. The first level is *to practice* WeChat, which is the regular use of functionalities on WeChat as they are intended to be used. The second level is *to appropriate* WeChat, meaning users apply WeChat's functions for uses that were not intended by the functions. The third level of user interaction is *to create* extensions of WeChat. To do this, users, who have the right technical skills, extend the functional boundaries of WeChat by developing add-ons to WeChat and thus create a customized version of WeChat. From the first to the third level, user's interaction with WeChat becomes more engaged, and users gain more flexibility for themselves from WeChat. As user interaction advances, the role of WeChat in user's life also changes, moving from a communication platform into an indispensable infrastructure that supports user's needs as they wish.

9.2.1 Level 1: To Practice

The first level of user interaction in a platform's infrastructuralization is user's practice of the platform. I use the term "practice" to highlight this adoption of technology that conforms to the technology's design intention. Common reasons of user adopting WeChat include low effort for learning (Zeng et al., 2013), low monetary cost (*i.e.,* WeChat is free) (Y. Wang et al., 2015; Zeng et al., 2013), moderate entertainment value (Y. Wang et al., 2015), and high social values such as the reach of a large social network (Xizi Wang & Ying Qian, 2015; C.-B. Zhang et al., 2017). What rules over these reasons is user's perceived value — people will use WeChat if they think WeChat is valuable (H. Huang & Zhang, 2017). I took these reasons into consideration and paid attention to user's practice of WeChat's diverse functionalities, aiming to explore if user's practice of these functions affects user's perceived value of WeChat and in turn influences WeChat becoming a widely accepted

platform.

Why did participants use WeChat's core communication functions? According to Chinese parents and their children, who frequently used WeChat for their long-distance communication since the children were studying abroad, WeChat was chosen because it offers diverse communication functions (more information in Chapter 4). A few examples include text/audio messaging, image/video messaging, and real-time audio/video chatting. Participants told us they used different functionalities on WeChat for different communication purposes. For instance, children used video chat for checking in with their parents but sent images of meals they cooked to assure parents they were eating well. A mother said her son who studied in the U.S. "likes to share photos of dishes he cooks in our WeChat family group, and the food looks really nice in the photos." An undergraduate student studying in the U.S. also said, "WeChat is good for making video calls and sending images, so we use WeChat to communicate." Since WeChat offers a variety of communication functions, it was simple for parents and children to stay on WeChat and use the communication features they preferred (R. Zhou, Wen, et al., 2017). Among all 24 parents and children we talked with, 16 commented WeChat as "good and convenient."

For the entertaining communication elements emoji and stickers (more information in Chapter 5), participants said they used them because they were "livelier and funnier" than text, which participants described as "boring, dry, and limited in expressiveness" (R. Zhou, Hentschel, et al., 2017). A male participant in his late 50s said, "I use stickers all the time. I'm a funny person, so I enjoy sending funny stickers like the ones with cartoon animals." Participants also appreciated WeChat for providing a "sticker gallery" with a large pool of different stickers, making it easy to select and use stickers. A woman in her 20s told us, "When I notice someone sending a new sticker I haven't seen before, I will open sticker gallery, checking if there's any new sticker I like." Participants liked that emoji and stickers are offered on WeChat so that they could use them.

Money transfer and Red Packet are two major financial functions on WeChat, and both

of them were used by participants in my studies. One father said, "I send Red Packets to my daughter on WeChat during festivals and on her birthday. When she comes back to China during school breaks, she can use the money." When being asked what she does on WeChat, a 54-year-old woman told us, "It is mostly about grabbing Red Packets in groups. No matter who sends Red Packets, I grab them for fun." In the third study (see Chapter 6), seven out of 15 participants, who were teens or young adults, said they used money transfer and Red Packet on WeChat because their parents sent them allowance through these functions. As a 14-year-old boy said, "my dad sends me money in Red Packets, and I use this money to buy stuff like food and coffee." Making purchases with WeChat in offline stores was common among participants since WeChat Pay was widely acceptable in cities and towns they lived.

Examples above show participants valued WeChat because WeChat has functions they needed and enjoyed in an accessible, convenient fashion, thus participants used these functions as they are intended to be used. I conclude that the first level of user interaction of WeChat infrastructuralization is to practice functions on WeChat as they are intended, especially its core communication functions. On this level, with more functions become available, more users use WeChat and the reach of WeChat rapidly expands, making WeChat a widely accepted platform. But only using functions on WeChat by abiding to their design intentions does not mean WeChat becomes an infrastructure, even though it is seen as a default communication choice. The first level lays out the foundation for WeChat to potentially become an infrastructure. To reach the deep embeddedness of infrastructure, the next level is decisive.

9.2.2 Level 2: To Appropriate

Much research has been done on technology appropriation (*e.g.,* (Carroll, 2004; Dix, 2007; Dourish, 2003)): the practice of using functions on a technology, but not in ways these functions are designed for. Scholars investigated the details of user's appropriation of technology and found that user appropriates a technology when there is no good tool to fulfill

their needs (*e.g.,* (Evans et al., 2018)) or when it is easier or more efficient to achieve a goal if they appropriate the technology (Dix, 2007). Technology appropriation is thus not planned actions; it is user's spontaneous reactions that happens during their interactions with technology. Since user appropriation is difficult to envision when developing a technology, some scholars argue it should be included as part of the technology development process led by users (Carroll, 2004; Pipek, 2005).

Technology appropriation is fundamental when developing an infrastructure. It is commonly found in the second phase of infrastructure development: scaling (Edwards et al., 2007). In this phase, a system expands from its initial context of use to many different contexts, aiming at reaching as many users as possible. Thus, the goal of this phase is to build a large user base across numerous locations and at the same time arrive at a deep embeddedness for each individual user — both are realized by user's appropriation of technology partially (there are other social and technical forces as well). In Star and Ruhleder's words, a system's scaling with user's appropriation represents the negotiation process between the system and the user to resolve the tension between global and local: "[A]n infrastructure occurs when local practices are afforded by a larger-scale technology, which can then be used in a natural, ready-to-hand fashion" (Star & Ruhleder, 1996).

I found examples of appropriation of WeChat when participants appropriated the design intention of customized sticker (more information in Chapter 5). Customized stickers, instead of being provided in sticker gallery, are directly converted from photos users took or created elsewhere and then uploaded to WeChat by users. They can be static images or gifs, and are designed for expressing non-verbal cues such as emotions and feelings (R. Zhou, Hentschel, et al., 2017). One female participant told me she knew a WeChat group where members did not send text messages, but only customized stickers made from pornographic videos. Living in a small town in central China, she explained that members of this group were not tech-savvy, and many lived in rural regions without high-speed internet or affordable mobile data plans. Instead of watching pornographic videos on the internet (illegal in

China), it was easier to be in such a group and see animated stickers showing short porn video clips (illegal as well). Another participant who lived in a rural region sold mobile data plans on WeChat. To activate the data plan, her customers had to change their phone setting. Since many customers who used iPhones did not know how to change the setting, she sent a customized sticker that illustrated the procedures as a series of continuous phone screenshots with text instructions — just like a tutorial (R. Zhou, Hentschel, et al., 2017). For her, sending this sticker was easier and faster than typing long text. Because stickers are much smaller in file size than video clips, I found them being appropriated more often by users whose phones have limited storage space or processing power, and I encountered most of these users when conducting the second study in rural regions of central China. Appropriation of sticker serves needs that cannot be easily met under certain social and technical constraints.

When walking us through the stickers she used, a female participant in her early 20s told me she saw people gamble in WeChat groups by sending Red Packets and a die sticker. The die sticker is a built-in customized sticker offered by WeChat that cannot be altered by user. As a pictorial representation of a die, when user sends this sticker, it "rolls" as animation and then stops, randomly showing a number from one and six. This woman said, "I saw people sending Red Packets and the die sticker together. It seems like they gamble by sending the die sticker, and then the one who loses will send Red Packets." On WeChat, neither the die sticker nor Red Packet is designed for gamble, but some users still appropriate these functions.

Central to the last two studies was appropriation of WeChat's communication and social functions. Instead of using other online shopping websites or WeChat Store, an online shopping mall within WeChat, participants appropriated WeChat's instant messenger and Moments for buying and selling, with the help of financial functions such as money transfer and Red Packet. Because neither the instant messenger nor Moments on WeChat is designed for shopping, this social commerce practice is an appropriation of communication and social

functions of WeChat. Similar appropriations of social network have been observed on other platforms too, such as Facebook (Evans et al., 2018; Moser et al., 2017).

There are several reasons of participants appropriating WeChat's instant messenger and Moments for buying and selling. Because WeChat is a social platform with a gigantic reach in China, it is easy and convenient for sellers to get to know more customers and talk to them directly. It is also more effective to advertise on Moments than on traditional shopping websites where there are many more competitors. A 24-year-old female seller told me, "On WeChat, [one can] just advertise on Moments. If people see your stuff when they look through their Moments, they might get interested and message you." For buyers, because WeChat holds most of their social relationships, they can see when their friends and family members start selling products and advertising on Moments. Since buyers know and trust their friends and families, it is natural for them to buy quality-sensitive products such as baby formula (Guilford, 2013) from people they trust on WeChat but not from unknown sellers on shopping websites. A mother of a toddler said, "My cousin is in New Zealand. There are local stores from which local people buy products. So sometimes I ask him to bring some stuff for me, such as food or health-care products. For these products, I won't buy from daigous. It's not safe." For the 15 young participants in the third study who bought and sold goods in WeChat's messenger, the greater possibility of reaching customers and the commonly used financial functions provide them opportunities to experiment with commercial practices that used to be out of their reach — important for teenagers who were transitioning into adults.

Examples above highlight user appropriation of WeChat. On this second level of user interaction of platform infrastructuralization, users still operate within WeChat's technical constraints, but they push the practices envisioned by WeChat through appropriating its functions for their local contexts and needs. Therefore, the platform designed for global use is localized by individual users in their own practices, reaching a deep embeddedness in each of these users' lives. For those who appropriate WeChat, WeChat is an infrastructure.

For those who do not appropriate, WeChat remains a powerful platform. This reflects Star and Ruhleder's understanding of infrastructure: "Infrastructure appears only as a relational property, not as a thing stripped of use" (Star & Ruhleder, 1996).

9.2.3 Level 3: To Create

Beyond appropriation, a platform allows for creation — creation of both function and value (Bogost & Montfort, 2009; G. Parker et al., 2017). On the third level, users with technical skills (who are often external developers) build functions, add these functions to WeChat, and create value for themselves, other users, and WeChat. In one case, we found users even altered WeChat functions through hacking. Creating upon WeChat allows for a user-customized version of WeChat. While this level is not necessary for user to transform a platform into an infrastructure, what we observed from WeChat users is that the proliferation of specialized function has helped WeChat meet unique needs and encouraged synergy between other corporate interests to create a fully realized infrastructure with greater value to the user.

The first approach to create on WeChat is through building add-ons to WeChat. Both WeChat official accounts and mini programs (see Figure 9.1) allow users to build add-ons. While official account owners mainly use official accounts to distribute content such as news or advertisements, they can also develop customized functions for their followers to use within their official accounts. For example, young participants who lived in a metropolis told us they used a reservation function in some restaurants' official accounts to reserve spots or start queuing before arriving at the restaurant. Similarly, a female participant who lived in the same city said, "Before going to a hospital, I will check on its official account to look for available slots and book them. This way I can save some time and hassle." By creating extra interactive functions in their official accounts, official account owners, who are also WeChat users, create value such as convenience and efficiency for other users.

Compared with official accounts, mini programs offer more freedom for customization

Figure 9.1: McDonald's WeChat Mini Program.

of function similar to a standalone application. With WeChat API, users can build their own mini programs and add them to WeChat (Ma, 2019), making them available for billions of users on WeChat. While we have not had the chance to study user experience of mini program, other scholars have found that WeChat users use a variety of travel-related mini programs to assist in planning travel, booking flights and hotels, understanding new languages, and more (A. Cheng et al., 2019). When doing fieldwork in China, the first author used McDonald's mini program to order food and pay with money in WeChat Wallet before arriving at the fast food shop for picking up (see Figure 9.1), saving much waiting time.

Both official accounts and mini programs are managed through WeChat Official Accounts Platform (Tencent Technology, 2019). External developers, after submitting applications for registering new official accounts or mini programs, need to wait for WeChat's review and approval of their applications. Once approved, external developers can use the API offered by WeChat to develop official accounts and mini programs. Before final

Figure 9.2: An Advertisement for a Pirated WeChat with a List of Extra Functions that Are Not Provided by the Official WeChat.

releasing, WeChat will again review the externally developed official accounts and mini programs, ensuring they abide by WeChat's regulations (WeChat Team, 2019). This whole process is strictly under WeChat's control.

The second and also a substantially more difficult approach for creating a customized WeChat is to hack into WeChat, change its functions, and come up with a new WeChat. When doing fieldwork for the second study in a village in central China, we met a young WeChat seller who used a pirated WeChat to help her manage customers. She told us most of her friends, who were WeChat sellers as well, used some kind of pirated WeChat applications, making it extremely easy for them to add more people to their WeChat (thus grow customer base) and manage existing contacts. These pirated WeChat applications were only available through people who developed or sold them, not seen on any formal Android or iOS application stores. Figure 9.2 shows an advertisement for a pirated WeChat shared by the seller we chatted with. It lists all special functions it offers that are not provided by the official WeChat. Examples include "automatically adding all people nearby as con-

tacts" and "deleting inactive contacts with one click." The participant paid for this pirated WeChat, and the pirated WeChat seller then sent it as a package to her phone, instructed her to change settings on her iPhone to install the pirated WeChat. After installation, this pirated WeChat co-existed with the official WeChat on her phone. Its interface looked just like the official WeChat; it could also do what the official WeChat can do — with some functions added or modified as advertised. The participant was free to use whichever WeChat application she preferred.

This last level of user interaction reflects the definition of platform as a digital technology with an open architecture that designed to facilitate user interaction. When a platform's open architecture is extended upon through creation, it presents itself as an infrastructure, matching one key quality of infrastructure pointed out by Star: an infrastructure is "fixed in modular increments, not all at once or globally" (Star & Strauss, 1999). User's creation upon WeChat is an instance of fixing WeChat in small increments.

9.3 Infrastructure Is a Contextualized Relation

While the three-level user interaction process was identified through analyzing findings from studies I conducted in China, the last study, which I conducted with Chinese WeChat users in the US (see Chapter 8), also offers insights for understanding WeChat as an infrastructure. In the last study, I switched my focus from examining WeChat's use in China to researching WeChat's use in the United States, hoping to learn if there were any differences in WeChat's use when the context changed. What I found, when viewing infrastructure as a relation between user and the tool (Star & Ruhleder, 1996), was that WeChat as an infrastructure is not only a relation but also a contextualized relation, where the "context" in "contextualized" does not solely mean the country WeChat is in. My study on people's use of WeChat in the US revealed several factors that could affect this relation: WeChat's compatibility with its surrounding environment, user's social circle, user's perception of themselves, and whether they use other social platforms. First, WeChat's compatibility

with its surrounding environment means if its functions can be used in its environment. For instance, most of WeChat's communication and social functions can be used regardless of in which country the user is in, but WeChat's payment functions could be cumbersome and poorly supported in places outside China, hindering people from using it as an infrastructure. Second, user's social circle refers to whether the user's social circle was mainly made up by Chinese people. If so, the user will use WeChat more, since WeChat is widely adopted by Chinese people. Third, user's perception of themselves also affects how much they use WeChat — if they see themselves closer to China and Chinese culture, they stay on WeChat more often because WeChat provides a similar environment to China. This factor is connected with last factor as well: if the user wants to explore the US instead of caring about China, they will use WeChat less often but spend more time on American social platforms, meaning that they are less likely to use WeChat as deeply as an infrastructure.

While all these factors influence whether users in the US use WeChat as an infrastructure, findings from my last study further show that although WeChat may not be perfectly compatible with the American environment it is in, whether it is an infrastructure to the users is largely determined by users themselves, their social circles, and the ways they use WeChat, which may not change even users have moved to the US. This was why some users in the US still appropriated WeChat (*e.g.,* used WeChat's file transfer account as a notepad and reminder), because they had been using WeChat intensively enough to achieve an in-depth understanding of the constraints and flexibility of WeChat. It is thus careless to say that WeChat can become an infrastructure *only in China*, or it being an infrastructure *solely* depends on where WeChat is. While the environment WeChat is in does affect the performance of WeChat and how people use it, it is the other factors related to users that matter more in determining if WeChat is an infrastructure. In conclusion, WeChat being an infrastructure or not is influenced by users, their social circles, their ways of using WeChat, and the environment WeChat is in: these are all contexts that matter. If a user relies on WeChat intensively for their everyday communication within their social circle which largely com-

prises Chinese, and if the user uses WeChat so deeply that they appropriate some parts of WeChat, WeChat is an infrastructure to this user, even if the user is not in China but in the US.

9.4 WeChat as a Platform-Infrastructure and Implications of Platform Infrastructuralization

To recapitulate the user's role in WeChat's infrastructuralization, first, users practice WeChat as a social platform and use its functions as they are designed for. This everyday practice of WeChat rapidly grows WeChat's user base, widening the reach of WeChat. Second, WeChat arrives at a deep embeddedness in users' lives through user appropriation of WeChat, meaning that users still practice WeChat, but not as it is designed for. While not every user appropriates WeChat, for those who do, WeChat, with a wide scope that connects a large number of people and a deep embeddedness in each of their lives, is *both* a platform and an infrastructure, or a *platform-infrastructure*. Third, WeChat can become more embedded in user's life if they create new functions on WeChat to fulfill their needs. The first level is foundational, on which WeChat goes wide; the second is determinant, on which WeChat goes deep; and the third is to broaden the reach and deepen the embeddedness even further through customization, rendering WeChat as the invisible support for more user practices.

This three-level process of infrastructuralization focuses only on the user's role — it does not capture all forces at play. For instance, if smartphones had not become widely affordable in China, mobile applications like WeChat would not grow. If it was not due to the Great Firewall and the techno-nationalist focus of the Chinese government (Plantin & de Seta, 2019), domestic Chinese online service providers such as Tencent (*i.e.,* the owner of WeChat) would not have been able to attract users so easily. Therefore, when understanding WeChat's infrastructuralization, this three-level process should be viewed together with other related literature (Plantin & de Seta, 2019): it expands on previous literature by highlighting the user's role in WeChat's infrastructuralization.

This leads to the question of whether this process can be applied to understand other platforms outside of China, if WeChat's infrastructuralization is affected by forces that are peculiar to China, such as the Great Firewall and the Chinese government's techno-nationalist agenda. While scholars find that WeChat collaborates with the Chinese government through sharing user data (Y. Chen et al., 2018) and censoring keywords (Ruan et al., 2016), when coming to WeChat's infrastructuralization, I found the Chinese government influenced mostly the first level of user interaction. The government permitted WeChat to build its user base when they permitted WeChat to compete with the state-owned telecommunications corporation China Mobile for its instant messaging market (Y. Chen et al., 2018), allowing for users to move to WeChat. While the government has fewer interventions with the second and the third level user interaction process, interactions on these two levels can even be in opposition to the government (*e.g.,* social commerce practices on WeChat catalyzed the enaction of the e-commerce law in China (Www.npc.gov.cn, 2018)). In my analysis, to appropriate and create with WeChat are more critical than to practice WeChat in platform infrastructualization. I thus argue that this three-level user interaction process is not constrained to solely understand WeChat's infrastructuralization in the Chinese context but can be applied to understand infrastructuralization of similar platforms in other contexts as well — when users play an evident role.

For example, Facebook — the largest social platform in the world (Statista, 2020) and also an infrastructure-like platform (Plantin et al., 2018). According to scholars, Facebook has become a near-monopoly, not with governmental influence, but from its strategical management of its functions, corporate partnerships, and users (Helmond et al., 2019). Similar to WeChat, Facebook first expanded by attracting users with its social functions; with more users, it added diverse functions; then it was appropriated (*e.g.,* (Evans et al., 2018; Fauville et al., 2015; Moser et al., 2017)), and it supported users to create on it with its APIs (Helmond et al., 2019). The ways WeChat and Facebook attract and support users by adding functions and increasing flexibility are very similar, pushing towards the same goal

of reaching pervasiveness and embeddedness in user's life. The three-level user interaction process can thus also shed light on the user's role in Facebook's infrastructuralization.

There are many implications of platform infrastructuralization. As discussed earlier, the most prominent difference between the ways platforms and systems infrastructuralize is that platforms do so through conquering almost the entire market, defeating its competitors and thus achieving a near-monopoly (Edwards et al., 2007). For instance, WeChat is now viewed as the "default" communication tool in China. For platform owners, there are evident benefits of owning an infrastructure (rather than a platform): with more users, more data can be generated and collected, thus attracting more capital and power than a locally used platform (Helmond et al., 2019).

For users, platform infrastructuralization presents both advantages and disadvantages. The advantage for using a platform-infrastructure is that user can save time and energy from choosing among multiple services, since there is only one dominant service provider in a market (*e.g.,* Facebook for social networking in some countries). If these platforms offer diverse functions (*e.g.,* WeChat), it is also more efficient for user to stick with one platform than to switch.

But the disadvantages for users are more concerning. First, platform-infrastructures need to be designed to be general, targeting "an average user" but not a specific group of users. This is because only a generally designed platform can be accessible to most people, potentially becoming pervasive. This compromise of specificity in design, which also affects the usefulness of the platform, is also a cause of user appropriation of the platform. Second, by using platforms and thus allowing them to become infrastructures, knowingly or not, users are handing their data to platform owners — private corporations driven by profit but not user's wellbeing. Although if the user has the right technical skills, they can hack into the platform and change it for their own needs — but only if they have those skills. As shown in earlier sections, I only found one participant who used a pirated WeChat. This singular adaptation characterizes the issue: while freestanding customized platform can be

developed, it is a luxury, only feasible for those who have initiative, resource, and skill. Most users can only use platforms as they are given, sometimes appropriating their functions, which, in fact, contributes to the infrastructuralization of these platforms.

This difficult situation faced by users — that by using platforms they are handing their data to platform owners and contributing to platform infrastructuralization — leads me to asking what we can do as interaction designers and researchers. It is naïve to call upon interaction designers to act in ways that disrupt this trajectory, because corporate goals usually conflict with concerns for humans in the case of platform infrastructuralization. However, when there are opportunities, designers should design for specific groups of users with focused needs and tasks, instead of designing for an "average" user. Designing for specificity offers better tools for users to use and makes it less likely for platforms to turn into monopolies. For example, designers could design focused, local tools to fulfill user appropriation so that users do not have to appropriate. In addition, as long been discussed, designers should keep in mind the possible social and moral consequences when they design technologies (Verbeek, 2011). In this case, the consequence is a monopolizing platform-infrastructure.

Similarly, researchers who work towards development of tools and tasks that extend the capabilities of WeChat and other platform-infrastructures should exercise more caution in how they work. The precedents set by researchers, who are viewed as role models, often lead their students and governments in developing understandings of what is acceptable in technology and what is not.

This chapter reveals that WeChat is a platform-infrastructure and users plays a significant role in WeChat's infrastructuralization process — this is the theoretical contribution of this dissertation. Many questions can be asked after understanding this user's role in platform infrastructuralization: Do users know how they contribute to the process of platform infrastructuralization? What future they will face when platforms become infrastructures? What will users do when they face this future? Or, if users do not prefer this future, what

can be done now to create alternative futures? The perils and opportunities discussed above are only a small portion of what may happen and what can be done. Much more remains unexplored in the ongoing phenomenon of platform infrastructualization.

CHAPTER 10
CONCLUSION

Since its birth in 2011, WeChat has slowly developed from a mobile instant messenger into an all-encompassing platform and an infrastructure. By April 2020, WeChat has accumulated 1.16 billion monthly active users (Statista, 2020), becoming the fifth popular social platform in the world and the most popular one in China. When examined closely, WeChat is a powerful, pervasive mobile application in Chinese people's everyday lives; when looked from afar, WeChat is a miniature of the ICT and internet development in China. In this dissertation, I present five empirical studies on how and why Chinese people use different functional aspects of WeChat to achieve diverse goals, delving deep into the complex facets of WeChat as an interactive technology. I also present a meta-analysis on data collected from these studies, focusing on how user's interaction with WeChat influences WeChat to move from a platform to an infrastructure. With all these studies, my dissertation offers the following contributions:

First, this dissertation provides an in-depth investigation of how a non-Western communication and social application is used by people. While people's usages of communication and social applications (*e.g.,* Facebook, Twitter, Line) share a lot of commonalities, for instance, people use them to keep in touch with friends and families, there are many differences in how each of these applications are used as well, since they are grounded in distinct cultural and social contexts. For WeChat, the Red Packet function it offers is an exemplar that it is both grounded in and reflecting a Chinese context. Such a culture-laden function has little chance to be developed in non-Chinese social applications. My studies have shown that Chinese people welcomed WeChat's digital Red Packet by using it for various purposes, expanding its original usage to many other scenarios: people send stickers featuring Red Packets to express their appreciation upon receiving Red Packets (see Chapter 5),

and parents give their children allowance via Red Packets (see Chapter 6). Further, as an application that was designed in China and used mostly by the Chinese, WeChat presents a clear cultural and social sense of China to those who are not in China (see Chapter 8). This dissertation clearly conveys the "Chinese-ness" of WeChat, adding up a valuable cultural piece to the world of social applications, which are dominated by Western applications such as Facebook, YouTube, and Twitter.

Second, this dissertation offers an overview of one of the most popular social platforms in the world from a *user-centered* perspective, which reveals the co-shaping, co-evolving relationship between WeChat and its users — that neither WeChat nor the user moves forward on their own; through interacting with WeChat, the user is shaped and changed by WeChat, while WeChat at the same time is also shaped and changed by the user. On one hand, by presenting numerous functionalities, WeChat not only aims at fulfilling users' needs but also cultivating users' habits (thus changes users). For instance, emoji, stickers, and other communication media on WeChat collaboratively create a virtual environment in which users can explore and form novel ways of communication through these media. For example, these media support users to accurately express themselves (see Chapter 5) and appropriately present their self-images (see Chapter 4). On the other hand, users' appropriation of WeChat and creation upon WeChat (see Chapter 9) show that users have the power to influence and change WeChat as well. For instance, by buying and selling goods in WeChat's instant messenger and social network, users force WeChat to expand from a social platform to a social-*commerce* platform (see Chapter 6 and 7), which is not intended nor anticipated by WeChat. Thus, uncovering the mutual shaping relationship between WeChat and its users, this dissertation is a firm rejection of technology determinism.

Last but not least, this dissertation builds upon and extends previous literature on platform infrastructure (*e.g.,* (Plantin & de Seta, 2019; Plantin et al., 2018)) by taking WeChat as an exemplar, detailing the role played by the user in platform infrastructuralization. Users interact with WeChat on three levels: to practice, to appropriate, and to create (see Chapter

9). The further the level goes, the deeper the user interacts with WeChat and pushes WeChat to become an infrastructure. By identifying this three-level user interaction process of platform infrastructuralization, this dissertation adds a crucial piece to the ongoing exploration of one of the most significant global phenomena happening now: platform infrastructuralization.

A question that naturally surfaces at the end of this dissertation is this: Where will WeChat go next? (And what will it become?) After completing my last study in Spring 2020, I witnessed WeChat making several important moves by integrating key functionalities, among which included "Channels" (a.k.a. *Shipin Hao*, 视频号) and "Tickle" (a.k.a. nudge, or *Pai-Yi-Pai*, 拍一拍). Channels represents a new functional section on WeChat where users can post short videos and view the ones posted by other people. Introducing Channels is not a surprising move since Chinese users have been enjoying short-video platforms such as Douyin (抖音) and Kuaishou (快手) for a while, and WeChat might want to compete with these platforms. Compared with Channels, Tickle is not a functional section but a small feature, where users can double tap someone's profile picture in a conversation to generate an effect that the one being tapped will sense a subtle shake of his or her phone — a simulation of being tickled or nudged in real life. By observing these recent moves of WeChat, it is clear that WeChat is still on the way of growing bigger by including more functions. However, introducing a dedicated short-video section also shows that WeChat fears other newer short-video platforms will attract users away from itself. Thus, to retain users, it is critical to keep users involved, entertained, and refreshed, which explains why WeChat develops small, enjoyable features like Tickle. While it is uncertain whether WeChat will be able to grow its user base further since it has struggled to gain non-Chinese users' preference, I believe WeChat will not stop from being more omnipresent, embedded, and transparent in Chinese people's life: it is fair to imagine WeChat becoming "the infrastructure of other infrastructures" in the future.

This dissertation leads readers into the intriguing and fascinating world of WeChat by

presenting a detailed overview of user's interaction with different functional aspects of WeChat. In the era of internet and digital technology, WeChat, although being only one instance among many information and communication technologies, shows how powerful a mobile platform could be through integrating various functions and constantly attracting users, eventually becoming an infrastructure. I hope this dissertation has encouraged the readers to deeply understand the impact a "small" application could bring; I also hope it has inspired new ideas, new questions, and new directions for readers. I wish you find this dissertation valuable.

Appendices

APPENDIX A

CHAPTER 8 DIARY STUDY INSTRUMENT

Hi [participant name], this is your [Xth] day of participating in this research project. Hooray! Today's task is really simple — just **come here whenever you've used WeChat and complete this short diary survey**. You don't have to literally come here every time you send a message; you could note down what you've done, for example, like after you chatting with your friend for an hour with a bunch of messages. Hope this is easy enough!

One thing to keep in mind is that you don't need to use WeChat more or less than you usually do. **Just do what you usually do**, and this is what we are looking for. Enjoy!

Pin me on WeChat if you have any questions. If you are ready, click on next to start.

Q1. During what time did you use WeChat for this time? Choose all that apply.

☐ Past midnight: 12 AM — 6 AM

☐ Morning: 6 AM — 12 PM

☐ Afternoon: 12 PM — 6 PM

☐ Night: 6 PM — 12 AM

Q2. Which of the following devices do you use WeChat on for this time? Choose all that apply.

☐ Mobile phone

☐ Tablet (e.g. iPad, surface pro)

☐ Laptop (e.g. Macbook, surface book)

☐ Desktop computer

Q3. Which of the following functions of WeChat did you use for this time? Please choose all that apply.

☐ Messaging (e.g. one-on-one private chats, group chats)

☐ Audio or video chatting

☐ Reading official accounts' posts

☐ Posting on Moments (aka Friend's Circle, WeChat's social network)

☐ Reading posts on Moments

☐ Transferring money in chats (e.g. sending red packets)

☐ Paying offline vendors through QR codes

☐ Using mini programs (e.g. external service accessed from within WeChat)

☐ Other(s), please specify: _____

Q4. Please briefly describe your purpose of using WeChat this time.

_____

Q5. **Optional:** Upload a screenshot of what you did on WeChat this time. You could do this on your phone/computer. This will help when we chat later.

Please do not share anything you do not want to share.

[A "Choose File" button] No file chosen

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